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SPEECH MONOGRAPHS

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GRADUATE THESES—AN INDEX OF GRADUATE WORK IN THE FIELD OF SPEECH—IV. *Franklin H. Knower* 1

STUDIES IN RHETORIC

The Elements of the Rhetorical Theory of Phillips Brooks. *Kenneth G. Hance* 16

The Oratory of James Wilson of Pennsylvania. *Horace G. Rahskopf* 40

STUDIES IN PHONETICS AND PHONOLOGY

Vowel Quality Before and After an Operation for an Occluded Nasal Passage. *John W. Black* 62

Infra-Glottal Resonance and a Cushion Pipe. *Raymond Carhart* . . 65

STUDIES IN SPEECH PATHOLOGY

A Study of the Medical History of Stuttering Children. *Mildred Freburg Berry* 97

STUDIES IN SPEECH PSYCHOLOGY

The Auditory Memory Span for Speech Sounds. *Virgil A. Anderson* 115

A Study of Speech Attitudes and Adjustments. *Franklin H. Knower* 130

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SPEECH MONOGRAPHS

VOLUME V DECEMBER, 1938 NUMBER 1

GRADUATE THESES—AN INDEX OF GRADUATE WORK IN THE FIELD OF SPEECH—IV*

FRANKLIN H. KNOWER
University of Minnesota

NUMBER IV of this series contains a record of 328 degrees granted in the field of speech. All were granted during the year of 1937 except four Masters' degrees granted between 1932 and 1936 by the University of Washington. The degrees first reported in this number include 27 doctorate degrees, 131 Master's degrees granted with requirements of thesis and 170 Masters' degrees granted without requirement of thesis. The total number of graduate degrees in Speech of which we now have a record is 2242. About 90% of these degrees have been granted within the last ten years. Twenty-eight institutions have granted the Masters' degree in Speech, and twelve institutions have granted the doctorate degree in Speech.

Table I indicates the institutional sources of degrees of various types which have been granted. Institutional names appearing in the list for the first time this year are Brooklyn College and South Dakota University. Syracuse and Yale Universities report doctorate degrees for the first time. Minnesota and Northwestern now have granted the Master's degree without requirement of thesis.

Table II contains a rough classification of the subject matters treated in the theses when grouped into six general areas in Speech. Masters' theses have been done most frequently in the areas of dramatics and education, while most doctorate studies have been done in the field of public address and fundamentals. There was a significant increase in the number of doctorate degrees granted in dramatics,

* The continued publication of these theses titles is possible only through the cooperation of Speech Department Administrators who have supplied the data. The writer wishes to extend to those who have cooperated an expression of the many indications of appreciation he has received for this service to the profession.

Ref V
200

TABLE I

INSTITUTIONAL SOURCES OF DEGREES GRANTED

	Masters' Degrees With Thesis	Masters' Degrees Without Thesis	Total	Doctors' Degrees	Combined Total
Akron	2		2		2
Brooklyn	2		2		2
Carnegie	9		9		9
Columbia—T.C.	3	500	503	8	511
Cornell	75		75	18	93
Denver	11		11		11
George Washington	2		2		2
Grinnell	1		1		1
Illinois	4		4		4
Iowa	277		277	28	305
Louisiana	32		32	4	36
Marquette	16		16		16
Michigan		318	318	12	330
Minnesota	23	1	24		24
Missouri	2		2		2
New Mexico Normal	8		8		8
Northwestern	221	6	227	3	230
Ohio State	12		12	1	13
Ohio Wesleyan	25		25		25
South Dakota	1		1		1
Southern California	143	111	254	2	256
Stanford	7		7	1	8
Syracuse	5		5	1	6
Utah	12		12		12
Washington, U. of	11		11		11
Western Reserve	1	44	45		45
Wisconsin	173		173	27	200
Yale		76	76	3	79
Totals	1078	1056	2134	108	2242

TABLE II

THESES CLASSIFIED BY SUBJECT MATTER

		Last List	New List	Total
Fundamentals	Masters'—Number	88	24	112
	Percent	9.31	18.35	10.40
	Doctors'—Number	20	6	26
	Percent	24.69	22.20	24.10
Public Address	Masters'—Number	164	13	177
	Percent	17.35	9.92	16.45
	Doctors'—Number	25	10	35
	Percent	30.87	37.00	32.40
Reading	Masters'—Number	37	6	43
	Percent	3.90	4.58	3.99
	Doctors'—Number			
	Percent			
Dramatics	Masters'—Number	400	46	446
	Percent	42.20	35.10	41.40
	Doctors'—Number	12	7	19
	Percent	14.81	25.95	17.60
Speech Defects	Masters'—Number	73	20	93
	Percent	7.71	15.25	8.64
	Doctors'—Number	11	3	14
	Percent	13.58	11.10	12.95
Education	Masters'—Number	166	22	188
	Percent	17.55	16.70	17.45
	Doctors'—Number	9	1	10
	Percent	11.11	3.70	10.80
Miscellaneous	Masters'—Number	19		19
	Percent	2.01		1.77
	Doctors'—Number	4		4
	Percent	4.94		3.71

and in the number of Masters' degrees granted in fundamentals this year.

Section II contains a list of theses titles classified by institutions, degree granted, year of granting the degree, and author's name alphabetically arranged within the year. The titles are given numbers in continuation from last year's list, beginning with number 1029 and extending to 1186. Section III contains an index of these titles classified on the basis of major academic areas in the field of Speech. The titles are listed in more than one area where overlapping is suggested.

SECTION II—TITLES

Brooklyn College

M.A. Theses

1937

1029. Allen, Margaret, A Diagnostic Study of Foreign Accent Tendencies Found Among Third Term Students in 7 New York City High Schools.
1030. Klein, Willette C., A Restatement of Plato's Contribution to the Theory of Persuasion.

Columbia University

Teachers College

Ph.D. Thesis

1937

1031. Lorenz, Jennie, Consistency of Auditory Acuity or Variability of Individuals among Four Tests with the 2-A Audiometer.

Cornell University

M.A.Theses

1937

1032. Archer, Russell Bennett, An Analysis of Some Textbooks on Speech and Public Speaking for the Secondary School.
1033. Eaton, Julia, Character as the Basis of Play Construction.
1034. Irwin, Ramon Lawrence, A Survey of the Principles of Disposition in Speech-Making.
1035. Jacobs, Louise Annetta, Sarah Siddons: As a Shakespearean Interpreter.
1036. Nichols, Egbert Ray, David Garrick—The First Modern.
1037. O'Connor, Marion C., Nervousness in Public Speaking.
1038. Shaw, Harold B., The History and Technique of Stage Effects.

1039. Wilkes, Arnold LeRoy, Joseph Jefferson and his Art of the Stage.

Ph.D. Theses

1040. Bryant, Donald Cross, Burke's Relations with Writers and Artists.
1041. Gilman, Wilbur Elwyn, Milton's Rhetoric: Studies in his Defense of Liberty.
1042. Harding, Harold Friend, English Rhetorical Theory, 1700–1750.
1043. McNabb, Leroy Clifford, A Rhetorical Study of the Principal Speeches of Burke.
1044. Scanlon, Ross, Drama as a Form of Persuasive Communication.

UNIVERSITY OF DENVER

M.A. Thesis

1937

1045. Redding, Charles W., The Psycho-Galvanometer as a Laboratory Instrument in the Basic Speech Course.

UNIVERSITY OF IOWA

M.A. Theses

1937

1046. Abernathy, M. Elton, An Evaluation of Alexander Campbell's Debating Techniques.
1047. Ainsworth, Stanley Humphreys, Emphatic Breathing of Auditors while Listening to Stuttering Speech.
1048. Bach, Marcus Louis, "The Mountain" (a play in three acts).
1949. Barnes, Arthur Morford, A Rhetorical Analysis of the Speeches of Stephen A. Douglas in the Lincoln-Douglas Debates.
1050. Bergh, Florence, Pronunciation Drills for College Freshmen. Part III.
1051. Canine, Mary Hagen, The Speech Needs and Abilities of Pupils in the Rural Schools of Mercer County, Illinois.
1052. Conkling, Burton Luther, The Speech Needs and Abilities of Freshmen Students in the College of Engineering at the State University of Iowa.
1053. Cunningham, Oza B., Analysis of Student Participation in Plays at the University of Iowa.
1054. Cowman, Jean Rice, Minnie Maddern Fiske, a Study in Acting.

1055. Danielson, Arlene Othelia, Pronunciation Drills for College Freshmen. Part IV.
1056. Draegert, Gayland LeRoy, An Experimental Study of Light and Shadow on the Face of the Actor.
1057. Gooding, Evelyn May, A Director's Designs and Prompt Book for King Cudraka's "The Little Clay Cart."
1058. Helton, Ora Tinsley, A Director's Designs and Prompt Book for a Production of "Andre" by William Dunlap.
1059. Hoaglin, LeMar William, The Duration Aspects of Emotional Speech.
1060. Jones, Morris Veo, Symbolic Formulation and Expression in Speech with Regard to Sentence Structure.
1061. Kimmell, Melba Louise, Specific Reactions by Means of which Stutterers Attempt to Avoid Stuttering. Part I.
1062. Knudson, Thelma A., A Case History Study of the Oral Recitation Problems of Stutterers.
1063. Kocher, Mary Louise, A Critical Analysis of the Oral Style of Four Representative Occasional Speeches of Daniel Webster.
1064. Kyvig, Edward Herman, A Technique for the Elimination of Distortion from Projected Images in Stage Lighting.
1065. Larson, Orvin Prentiss, Phillips Brooks' Theory and Practice of Preaching.
1066. McIntosh, Carl Weston, An Auditory Study of Nasality.
1067. Maddox, James S., The Role of Visual Cues in the Precipitation of Stuttering.
1068. Mann, Mary Ellen, Stuttering in Relation to Various Speech Sounds in Young Children.
1069. Prall, Martha Ruth, The Problems of Public School Speech Correction in a Small Town in Iowa.
1070. Pronovost, Wilbert Lucien, Jr., Pitch Aspects of Emotional Speech in the Theatre.
1071. Sarby, Cecil Boneta, An Evaluation of Research Findings on Errors in Oral Reading with Implication for the Teaching of Speech.
1072. Smith, Warren Sylvester, Experimental Production of an Original Play "A March for the Conquered."
1073. Snidecor, John Clifton, Tension and Facial Appearance in Stuttering.
1074. Stewart, Rodney Cromwell, Experimental Production of an Original Play, "Children of Thunder."

1075. Stutenroth, Ruth Irene, Specific Reactions by Means of Which Stutterers Attempt to Avoid Stuttering. Part II.
1076. Taylor, Glenn James, The Nature of Stuttering at its Onset.
1077. Tornquist, Don Glenn, A Selection of British Plays Written Between 1300 and 1800, Suitable for Study or Production by High School Students.
1078. Williams, Hazel Louise, Designs and Prompt Book for a Production of "The Octoroon" by Dion Boucicault.

Ph.D. Theses

1079. Goates, Wallace Albert, Pitch Changes in the Voices of Actors in Rehearsal.
1080. Laase, LeRoy Theodore, The Effect of Pitch and Intensity on the Quality of Vowels in Speech.
1081. Milisen, Robert Lloyd,
    I. Sidedness Preference of Rats and Dogs.
    II. Anticipation of Stuttering as Related to the Frequency, Type and Point of Occurrence of Overt Stuttering.
    III. Clinical Study of Stutterers, Former-Stutterers, Normal Speakers with Changed Handedness, and Articulatory Defectives.
1082. Wagner, Loretta Allen, A Diagnosis of the Speech Needs and Abilities of Prospective Teachers.

LOUISIANA STATE UNIVERSITY

M.A. Theses

1937

1083. Beene, Marjorie W., A Collection of Exercises for the Tongue, Lips, and Jaw together with an Experimental Study of the Efficacy of Certain Selected Exercises.
1084. Coxe, M. S., A View of the Views of Phoneme.
1085. Edenfield, Marshall Calder, A Comparative Study of the Occurrence of Speech Defects in Blind and Seeing Subjects.
1086. Flack, Mrs. Zelma O., The Technique of the Dramatic Monologue.
1087. Konold, Florence, A Workbook in Speech Correction for High School Teachers.
1088. Nesom, Lucia, A Progressive System of Teaching the Sounds of Speech.
1089. Peterson, Gordon E., The Theory of the Operation of the Vocal Mechanism.

1090. Skelly, Loretta, A Comparison of Rhetorical Devices Used in Twelve Intercollegiate Debates with Accepted Textbook Principles.
1091. Smith, Thelma, A Comparison of Standard Techniques of Acting and Interpretation as Applied to Wilde's "Lady Windemere's Fan."
1092. Varnado, Nellie Mae, A Survey of Speech Defects in the Grammar Schools of Baton Rouge, Louisiana.
1093. Williams, Dallas, A Comparison of Two Methods of Teaching Pitch Variation.
1094. Wise, Harry Stephen, A Phonetic Study of the Southern American (ai) Phoneme.

Ph.D. Thesis

1095. Krefting, Clara, Objective Studies in the Oral Style of American Women Speakers.

Marquette University

M.A. Theses

1937

1096. Finley, Georgia, The Value of Auditorium Training Programs as an Aid for Improved Assembly Programs.
1097. Moe, Alice, The Changing Aspects of Speech Education in the United States from 1636 to 1936.
1098. Sommers, Leonard, The History of the Production of Goethe's "Faust."

University of Michigan

Ph.D. Theses

1937

1099. Hance, Kenneth Gordon, The Rhetorical Theory of Phillips Brooks.
1100. Lippman, Monroe, The History of the Theatrical Syndicate: Its Effect Upon the Theatre in America.

Sc.D. Theses

1101. Palmer, Martin Franklin, The Cardiac Cycle as a Physiological Determinant of Energy Distributions in Speech.
1102. Van Dusen, Clarence Raymond, A Study of the Relation of the Relative Size of the Two Hands to Speech and Laterality.

UNIVERSITY OF MINNESOTA

M.A. Theses

1937

1103. Dusenbury, Delwin B., A Study of the Specificity of Visible and Audible Symbols of the Emotions.
1104. Latta, Marion, A Study of Word Pronunciation in the Speech of University of Minnesota Speech Students.
1105. Rutherford, Bernice R., Speech Therapy for Spastics—A Case Study Analysis of Seventy-Three Cases.
1106. Ziemes, Dorothy, A Study of Stutterer's Attitudes and Audience Reaction.

UNIVERSITY OF MISSOURI

M.A. Thesis

1937

1107. Dyer, Armel, Hamilton's Rhetoric in "The Federalist."

NORTHWESTERN UNIVERSITY

M.A. Theses

1937

1108. Bauman, Caroline, Melodrama in America from the Beginning to 1815.
1109. Breen, Robert, A Production of John Webster's "The Duchess of Malfi."
1110. Chreist, Fred Martin, The History of the Professional Theatre in South Bend, Indiana.
1111. Crews, Albert, "Let My People Go," an Original Play.
1112. Fuchs, Theodore, The Design of an Improved Spotlight.
1113. Geake, Robert Charles, A Critical and Analytical Survey of Textbook Materials on Directing in the Amateur Theatre.
1114. Grossenbacher, Helene, The Interpretation of Swinburne's "Hertha."
1115. Hadley, Dorothy Siedenburg, Contemporary Estimate of Henry W. Grady as a Public Speaker.
1116. Harris, Mary Kay, A Check List of Women's Style Trends for 1900 to 1905, with Patterns to Scale and Fabrics for Their Use on the Stage.
1117. Held, McDonald Watkins, The Use of the Limelight in the English and American Theatres from 1825 to 1900.

1118. Herbst, Dorothy Margaret, A History of the Cleveland Play House from its Origin to September, 1936.
1119. Jones, Mamie Josephine, A Study of Laryngeal Action in Different Types of Vocal Attacks.
1120. Kozelka, Edwin Paul, A Production of Eugene O'Neill's "Beyond the Horizon."
1121. Loeb, Helen, A Study of Academic Recognition of Secondary School Speech Courses by State Universities as a Basis for University Admission.
1122. Mitchell, Martha Hatton, A Stylized Production of Holberg's "Erasmus Montanus" and "Jeppe of the Hill."
1123. Newell, Grace, A History of Direction on the New York Stage up to 1805.
1124. Opper, Hylbert Norman, Exposition in the Plays of Eugene O'Neill.
1125. Pearson, Zula Holcomb, Figurative Language in the Speech of Texans.
1126. Peckham, Mary, A Production of Sidney Howard's "The Silver Cord."
1127. Richey, Dorothy, An Adaptation of the "Knight of the Burning Pestle" for High School Production.
1128. Richey, Evelyn Bernice, An Interpretation of Edgar Allan Poe's "The Fall of the House of Usher."
1129. Ross, Annie, A Production of Sean O'Casey's "Juno and the Paycock."
1130. Saal, Mary Elizabeth, An Adaptation of the "Merchant Gentleman" for Junior High School.
1131. Tarrant, L. Newell Jr., A Production of Henrik Ibsen's "A Doll's House."
1132. Teeter, R. W., Jr., A Production of Sweeney Todd: "The Demon Barber of Fleet Street."
1133. Whitfield, Rachel, A History of the Chicago Little Theatre from 1912 to 1917.
1134. Woodard, Mary Jane, A Stylized Production of "The Tragedy of Tragedies or the Life and Death of Tom Thumb the Great."

Ph.D. Thesis 1937

1135. Monroe, Alan Houston, Experimental Studies in the Measurement and Analysis of Audience Reaction to Student Speakers.

OHIO STATE UNIVERSITY

M.A. Theses

1937

1136. Carrick, Eloise Ann, The Nature of Word Concepts as Revealed in the Addresses of William Jennings Bryan.
1137. Drushal, John Garber, The Syllabic Rates of Radio Speakers.
1138. McCague, Wilma Gallagher, The Influence of Shaw's Experience as a Director of Plays on his Stage Directions.

UNIVERSITY OF SOUTH DAKOTA

M.A. Thesis

1937

1139. Reutter, Delbert C., An Analysis and Evaluation of the Speech Courses in the Secondary Schools of South Dakota.

UNIVERSITY OF SOUTHERN CALIFORNIA

M.A. Theses

1937

1140. Baird, Emma Patty, A Historical and Practical Preparation for a Prompt Book of "Twelfth Night."
1141. Brigham, Fleda Margaret, An Osteopathic Approach to Corrective Speech Problems.
1142. Goossen, Mina Sarah, The Social and Economic Status of the Actor in Europe Prior to the Renaissance.
1143. McGuire, Marion, A Fundamental Therapy for Developing Speech in a Backward Child.
1144. Ziskind, Sylvia, A Study of Propaganda Drama in the Contemporary American Theatre.

STANFORD UNIVERSITY

M.A. Thesis

1937

1145. Beene, Rosalind, Tennyson's Images of Water.

SYRACUSE UNIVERSITY

M.S. Theses

1937

1146. Buckland, Gertrude Smith, A Project in Speech Education.
1147. Severance, Anna P., A Psychological Study of the Difficulty of Speech Sounds.

Ph.D. Thesis

1148. Ehrensberger, Ray, An Experimental Study of the Relative Effectiveness of Certain Forms of Emphasis in Public Speaking.

UNIVERSITY OF WASHINGTON

M.A. Theses

1932

1149. Strother, Charles Riddell, Breath Control and the Speaking Voice.

1936

1150. Basler, Roosevelt, The Effects of Speech Training on High School Marks.

1151. Bixby, Mary Elizabeth, Demonstration Materials for Use in Teaching Extempore Speaking with Analyses and Proposed Methods for Adaptation to Course Procedure.

1152. Miller, Elvena, A Survey of the Objective Studies Related to Stuttering with Suggestions of Problems for Further Research.

1937

1153. Blake, Frances-Ann, The Etiology and Therapy of Uraniscolalia.

1154. Blyton, Gifford Seymour, A Survey of Speech Defects in the Public Schools of Puyallup, Washington.

1155. Caldbick, Helen Maren, A Survey of Speech Defects of the Grade School Children in the Public Schools of Everett, Washington.

1156. Peterson, Margaret Victoria, Therapeutic Materials for the Treatment of Paralalia on the Primary and Secondary School Levels.

1157. Tanberg, Merritt Clayton, A Study of the Incidence of Speech Defects Among the School Children in the State of Washington.

1158. Youngs, Mildred Andrews, Shakespeare's Use of Oratory in the Roman Plays.

UNIVERSITY OF WISCONSIN

M.A. Theses

1937

1159. Brockhaus, Herman Henry, Suggestion as a Means of Persuasion, With Special Application to the Religious Revival.

1160. Hager, Cyril F., Persuasive Elements in the Speeches of Franklin Delano Roosevelt.
1161. Herman, Helen K., Introductory Study in the Trends in American Dramatic Criticism.
1162. Kellogg, Marie J., History of Puppetry in England from its Beginning to 1750.
1163. Lundman, Alma Tress, Humor as Interpreted by the American Audience.
1164. Masters, Gail, Drama for the Junior High School Age.
1165. Myer, Margaret B., The Attitudes Toward the Negro as Reflected by the American Drama of this Century.
1166. Pence, Lola L., The Dramatic Theories of George Bernard Shaw.
1167. Pomerantz, Alfred B., An Account of Meaning with Reference to Speech.
1168. Seabury, Lorna G., The Use of Imagery in the Plays of Maxwell Anderson.
1169. Templin, Mildred C., Aggressiveness and Ability in Speech.
1170. Thorel, Jean P., The Theatre of Jacque Copeau.

Ph.M. Theses

1171. Carmody, Marion G., The American Actors Before 1849.
1172. Hoffman, Gladys Lucille, An Analysis of the Major Campaign Speeches of Mr. Roosevelt and Mr. Landon in the 1936 Election.
1173. Holm, James Noble, An Outline of Standards and Techniques in Judging Speech Contests.
1174. Hunter, Charles, Thomas Hart Benton—Spokesman of the West.
1175. Miller, Lora, The Persuasive Characteristics of Dorothy Lynde Dix.
1176. Thomas, Marie E., Speaking Activities of Women in the Campaign of 1936.

Ph.D. Theses

1177. Anderson, Virgil Antris, Auditory Memory Span as Tested by Speech Sounds.
1178. Ansberry, Merle, Auditory Deficiencies of Acuity and Their Correction with Prosthetic Applicances.
1179. Beck, Nemias B., The Oratory of Alexander H. Stephens.
1180. Berry, Mildred F., A Study of the Medical History of Stuttering Children.

1181. Mitchell, Rexford S., William Lowndes Yancey: Oratory of Southern Constitutional Rights.
1182. Oliver, Robert T., Re-evaluation of the Oratory of Burke, Fox, Sheridan and Pitt.
1183. Shaver, Claude, The Delsarte System of Expression as Seen Through the Notes of Steele MacKaye.

Yale University

Ph.D. Theses

1937

1184. Kernodle, George Riley, Perspective in the Renaissance Theatre.
1185. McDowell, John Huber, The Iconography of the Early "Commedia dell'Arte."
1186. Roediger, Virginia More, Ceremonial Costumes of the Pueblo Indians.

SECTION III

INDEX

Fundamentals of Speech

Action: Visible symbols of—1103.

Analysis of Factors in: Audience reactions—1135, Auditory acuity—1031, Auditory deficiencies—1178, Auditory memory span 1177, Energy in 1101, Humor and audiences 1163, meaning in speech 1167.

Composition: Persuasion 1030, 1044, 1060, 1075, Suggestion 1159.

Emotion: Duration in speech 1059, Nervousness 1037, Psycho-galvanometer 1045, and speech in the theater 1070.

Language: Figurative 1125, Sentence structure 1060, Women speakers 1095.

Personality: Aggressiveness 1169.

Phonetics: Difficulty of Sounds 1147, Exercises 1083, Foreign accent 1029, Phonemes 1084, 1094, Teaching 1088.

Respiration: 1149.

Voice: Duration 1059, Mechanism 1089, Nasality 1066, Pitch 1070, 1079, 1093, Pitch and intensity 1080, Pronunciation 1050, 1055, 1104, Syllabic rate for radio 1137, Symbols 1103, Vocal attack 1119.

Public Address

Orators: Thomas Hart Benton 1174, Brooks 1065, 1099, William J. Bryan 1136, Burke 1040, 1043, 1182, Alexander Campbell 1046, Stephen A. Douglas 1049, Fox 1182, Henry W. Grady 1115, Alfred Landon 1172, Pitt 1182, Franklin Delano Roosevelt 1160, 1172, Sheridan 1182, Alexander H. Stephens 1179, Webster 1063.

Oratory: Shakespeare's 1158, Southern constitutional rights 1181.

Public Speaking: Emphasis in 1148, Nervousness in 1037, Roosevelt and Landon 1163, Suggestion in 1159, Women in campaign of 1936, 1176.

Rhetoric: Disposition in 1034, In debating 1090, English theory of 1042, Hamilton's 1107, Milton's 1041, Oral style 1095, Plato on persuasion 1030.

Reading

Errors in 1071, Monologues 1086, of Fall of the House of Usher 1128, of Hertha 1114, of Lady Windemere's Fan 1091, Siddons 1035, Tennyson's images 1145.

Dramatics

Acting: Delsarte 1183, Emotional speech in 1070, Pitch changes 1079.

Actors: Fiske, 1054, In Europe 1142, Garrick 1036, Joseph Jefferson 1039.

Costuming: Ceremonial of Pueblo Indians 1186, Style trends in 1116.

Criticism: Trends in 1161.

Directing and Producing: Limelight in 1117, Stage effects 1038.

Dramatists—Playwrights and Producers: Anderson 1173, Jaque Copeau 1170, Shakespeare, 1158, Shaw 1138, 1166.

History of the Theater—General: Productions of Goethe's Faust 1098.

History of the Theater Abroad: Actors in Europe 1142, "Commedia Dell'Arte" 1185, Perspective in Renaissance Theater 1184, Puppetry in England 1166.

History of the Theater in America: Actors 1171, Chicago little theaters 1133, Cleveland Play House 1118, Melodrama 1108, New York Stage 1123, South Bend 1110, The Theatrical Syndicate 1100.

Lighting: And the actor 1056, Design of spotlight 1112, Distortion in 1064.

Plays: Maxwell Anderson 1168, Attitudes toward the negro 1165, Character in 1033, Exposition in 1124, Oratory in Shakespeare's 1158, Original 1048, 1111, Persuasion in 1044, Propaganda in 1144.

Prompt Books—Directors Studies and Productions: Andre 1058, Beyond the Horizon 1120, Children of Thunder 1074, The Conquered 1072, The Demon Barber of Fleet Street 1132, A Doll's House 1131, The Duchess of Malfi 1109, Erasmus Montanus, and Jeppe of the Hill 1122, Juno and the Paycock 1129, The Little Clay Cart 1057, A March for the Conquered 1072, The Octoroon 1078, The Silver Cord 1126, The Tragedy of Tragedies or the Life and Death of Tom Thumb the Great 1134, Twelfth Night 1140.

Puppetry: 1162.

Theater and Stage Construction: Perspective in 1184.

Pathology

Analysis of Factors in: Clinical study 1081, Foreign Accent 1029, Hand size and speech 1102, Speech of the blind 1085, Speech correction in small schools 1069, Spastics 1105, Uraniscolalia 1153.

Stutterers: Attitudes 1106, Avoidance in 1061, 1075, Breathing of auditors 1047, Medical history of 1180, Precipitation 1067, 1076, 1081, Recitation problems of 1062, Tension and 1073, Speech sounds 1068.

Surveys: Baton Rouge, La. 1092, Everett, Washington 1155, Puyallup, Washington 1154, State of Washington 1157.

Therapy: Backward child 1143, Osteopathic approach 1141, Parolalia 1156, Uraniscolalia 1153.

Education

Analysis of Needs: Engineering students 1052, Rural pupils 1051, Small schools 1068.

Assembly and Auditorium: Training for 1096.

Books—Manuals and Syllabi: For amateur theater 1113, Speech correction 1087, Texts for high school 1032.

Debating: Intercollegiate 1090.

Dramatics: Adaptation of Knights of the Burning Pestle 1127, Adaptation of Merchant Gentleman 1130, Junior High School 1164, Plays of High School 1077, Students in 1053.

Elementary School: 1051.

Exercises: For articulators 1183, Pronunciation drills 1050, 1055.

Methods: Auditory deficiencies 1178, Delsarte 1183, Extempore speaking 1151, Teaching pitch variation 1093, A project 1146, Teaching speech sounds 1088.

Reading: Errors in 1071.

Surveys: Academic recognition of speech courses 1121, Changes in speech education in the United States 1097, South Dakota 1139.

Teacher Training: Speech for teachers 1082.

Testing and Rating: Judging speech contests 1173.

Values and Results: Speech and high school marks 1150.

Institutional Sources of Theses by Number

Brooklyn College ..... 1029—1030
Columbia University—Teachers College 1031
Cornell University ..... 1032—1044
Denver, University of 1045
Iowa, University of ..... 1046—1082
Louisiana State University ..... 1083—1095
Marquette University ..... 1096—1098
Michigan, University of ..... 1099—1102
Minnesota, University of ..... 1103—1106
Missouri, University of 1107
Northwestern University ..... 1108—1135
Ohio State University ..... 1136—1138
South Dakota, University of 1139
Southern California, University of ..... 1140—1144
Stanford University 1145
Syracuse University ..... 1146—1148
Washington, University of ..... 1149—1158
Wisconsin, University of ..... 1159—1183
Yale University ..... 1184—1186

THE ELEMENTS OF THE RHETORICAL THEORY OF PHILLIPS BROOKS

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ON February 6, 1893, James Bryce said upon the death of an American preacher:

> "He spoke to his audience as a man might speak to a friend, pouring forth with swift, yet quiet and seldom impassioned earnestness the thoughts and feelings of a singularly pure and lofty spirit. . . . In the blending of perfect simplicity and elevation of thought, no other among the famous preachers of the generation that is now vanishing approached him." [1]

This preacher was Phillips Brooks, whom Dr. Frank W. Gunsaulus once called "the greatest preacher in America." This was the man whose name is associated with the great Trinity Church, whose statue—provided by the citizens of Boston—overlooks busy Copley Square in that city in which for over two decades Brooks was a religious and civic leader.

Great as a preacher, pastor, and bishop, Brooks was also a rhetorician. In addition to delivering hundreds of sermons and addresses, he presented at Yale a series of lectures on preaching, and upon other occasions made observations which provide us with a body of rhetorical material that is important to both clerical and lay students.

In Brooks we can find material for many studies, such as: "Brooks' Place in the Rhetorical Tradition," "Brooks' Place in the Homiletical Tradition," "Brooks' Practice of His Rhetorical Principles," "The Rhetorical Influences upon Brooks," or "The Influence of Brooks upon Rhetoric and Oratory." Here, however, we are concerned with "The Elements of Brooks' Rhetorical Theory." [2]

Because Brooks was an outstanding Yale lecturer, because he has been cited in numerous volumes of rhetoric, and because he has made contributions to our knowledge of rhetorical theory, he is worthy of our close attention. In fact a justification of a study of Brooks

[1] *The Westminster Gazette*, February 6, 1893.

[2] I have made a systematic study of the relation between Brooks' theories and those of selected representatives of the classical rhetorical tradition. I have also made a systematic study of the relation between Brooks' theory and practice. But we are not here concerned with these studies, which will be published at another time.

can be made on the grounds that his rhetorical theory has been little investigated, its parts have not been drawn together and systematically arranged, and its points of distinctiveness have been only incidentally mentioned by biographers. Even though much of the material appertains to preaching, it will be recognized as a body of rhetorical theory of concern to all students of speaking.

In this paper I propose to survey the elements of Brooks' theory from the point of view of the traditional constituents of rhetoric: Invention, Disposition, Style, Memory, and Delivery. The plan will be to recall the nature of each constituent, reconstruct and briefly appraise Brooks' theory concerning each, and suggest factors which form the peculiar contribution of Brooks.[3]

In reconstructing Brooks' rhetorical theory, I shall bring together materials from the *Lectures on Preaching, The Bohlen Lectures,* the address on "The Teaching of Religion," the address on "The Purposes of Scholarship," the sermon entitled "The Priesthood," letters, note-books, and other sources.[4]

INVENTION

Invention is that constituent of rhetoric concerned with the finding and analyzing of the materials of the speech. In *De Oratore* Cicero says concerning Invention: "he (the speaker) ought first to find out what he should say." Again he conceives of its purpose as "to invent what you are to say."[5] Invention embodies such elements as: purposes and kinds of speeches, topics (subject-matter) of speeches, finding the modes of persuasion, preparation of the speech, and the analysis of the audience.[6]

[3] Brooks' organization includes: Speaker, Speech, Audience, and Delivery. However, I am using the organization of the ancients because of its widespread use in rhetorical literature and its usefulness as a system of classifying the rhetorical elements.

[4] *Lectures on Preaching* (New York: E. P. Dutton and Co., 1877); *The Bohlen Lectures on the Influence of Jesus* (New York: E. P. Dutton and Co., 1890); *Essays and Addresses* (New York: E. P. Dutton and Co., 1894); "The Priesthood," a sermon (Boston: Trinity Church, no date).

[5] *De Oratore,* Bohn Edition, pp. 178, 242.

[6] The inclusion of "speech preparation" and "the analysis of the audience" under Invention should need no justification. However, because Brooks is explicit concerning these rhetorical elements, I wish to call attention to them at this point.

In approaching Brooks at this point—or concerning any of the constituents of rhetoric—we should observe his philosophy of individual differences within the limits of rules. While "no two men are precisely similar, . . . (and) consequently the make of every man's sermon must be different from the make of every other man's," there is no need for an apology for rules and methodical analyses of speech-making, since rules are a necessary means to a desirable end.[7]

Speech Purposes

To Brooks the purpose of the speech is important in that it determines the form and content. Commenting upon the power of the Sermon on the Mount, he says: "I do not see how any one who reads it carefully can fail to see that in that sermon we have what is essentially a unit—one single, separate discourse of Jesus. . . It has its unity in its controlling purpose. It is one by the life-blood of the idea which beats through it."[8]

Specifically, he conceives of the purpose of the sermon as "the persuading and moving of men's souls."[9] Any other, he believes, is unworthy, for to think of a sermon as a work of fine art is not only to miss the real purpose but also to damage the cause of preaching. Further, Brooks believes that to think of the purpose in terms of the classifications of "exposition" or "exhortation" is incorrect, for in thinking of these purposes, one confuses the basic objective, loses sight of the persons to whom he is speaking, and "mangles the idea and produces a one-sided thing."[10]

In addition to giving a definite purpose for the sermon, Brooks points out some pitfalls certain to appear if one disregards this purpose.[11] More than this, he tells us that the purpose should have tangible and practical relationships to the audience, that it must be selected in terms of the needs of the audience. In this he is practical, advising against superficial objectives and advising analysis of the audience and concrete applications.

[7] *Lectures on Preaching,* p. 144.

[8] *The Bohlen Lectures,* 25–26.

[9] *Lectures on Preaching,* p. 110.

[10] *Ibid.,* p. 130.

[11] Among the pitfalls are: (1) Giving men a *theory* of life when they want a *law* and an *inspiration* of life; (2) Creating a sermon in terms of the preacher's needs alone.

Topics

Brooks systematically develops the phase of rhetorical theory appertaining to Topics, or the subject matter of speaking. Believing that "the make of the sermon must always be completely dependent upon the idea of a sermon," he justifies an analysis of the principles appertaining to the selection of the content, including a consideration of the plane of material, the broad principles of the selection of subject-matter, and some suggestions concerning choice of material.[12]

As to the plane of the material, Brooks is emphatic. He insists upon a high plane in order that there may be "authority" in the sermon through relation to Truth, through which Personality is to be communicated to the audience. This excludes petty matters from the sermon, at the same time permitting use of the preacher's ideas or powers of interpretation.[13]

Ordinarily, he says, there should be no problem in the selection of a sermon topic and the materials for developing it. This view is consistent with his theory of the speaker's qualities (to be considered later), for if one's life is "rich" and his conception of a sermon what it should be, no difficulty will result. Further, this view suggests that Brooks' theories coordinate harmoniously in all their interconnections.[14]

To Brooks "simple texts and broad truths" are ideal topics. He objects to the use of strange and fantastic themes and of theological issues, saying: "let the subjects of your sermons be mostly eternal truths."[15] Further, he suggests subjects appertaining to the needs of the audience and topics that are timely. Lest this latter principle appear to contradict the suggestion on "eternal truths," we should note his position: "eternal truths" should be used as backgrounds or undergirdings for a discussion of problems of a specific period, such as slavery, temperance, or war and peace. "Controversy is a means. The end is greater than the means."[16] Finally, Brooks suggests subjects appertaining to the "speaker's heart and mind." He says: "the real question about a sermon is . . . whether there ever was a time when the discourse sprang freshly from your heart and

[12] *Lectures on Preaching*, p. 143.
[13] *Ibid.*, p. 122.
[14] *Ibid.*, p. 150.
[15] *Ibid.*, p. 221.
[16] "The Teaching of Religion" in *Essays and Addresses*, p. 55.

mind."[17] Here is insistence upon vital topics, materials meaningful to the speaker as well as to the audience, not mere abstractions. Here is a body of principles which, Brooks believes, will assist in the construction of a good sermon, not a "great sermon" which will be like the chair made so fine "that you dare not sit down in it."[18]

This emphasis upon Topics is in the Aristotelian tradition. It reminds us of Aristotle's analysis of the basic Topic "happiness" for deliberative speaking, together with the supplementary consideration of the interests of the audience, collectively called "the good." Brooks' Topics are concerned with the relation of audience and speaker to Truth.

Modes of Persuasion

A third phase of Invention, choosing the modes of persuasion, is likewise developed by Brooks, with the greatest emphasis upon persuasion through the character of the speaker (Ethos), less upon persuasion through emotional appeal (Pathos), and comparatively little upon logical argument. In this respect he is both like and unlike the classical tradition, like in recognizing all three modes, and unlike in that he comparatively understates the theories concerning logical argument. (We shall observe, however, the reasons for this apparent understatement, and the nature of Brooks' theory of reasoning.)

Ethos

Like Aristotle, Brooks regards the speaker as the keystone of the speech situation, for every quality which we desire in the good speech must be in the speaker and every desirable effect of an able ministry or of a speech situation can be traced to the character—broadly speaking—of the speaker.[19] Our analysis, however, should go further, for Brooks does what we should expect a preacher to do; he requires more than the simulation of those qualities making for good character; he insists upon their possession by the speaker. Further, he makes a distinction between the passing of these qualities *over* the speaker and the passing of them *through* him. In a measure this is like his theory concerning "possession," but it goes further in suggesting the cause of the penetration. It also calls attention to the

[17] *Lectures on Preaching*, p. 172.
[18] *Ibid.*, p. 151
[19] *Ibid.*, p. 109.

results, making the distinction between the man who is a "trumpet" and the man who is a "real messenger of God."[20]

Aristotle says: "As for the speakers themselves, the sources of our trust in them are three, for apart from the arguments there are three things that gain our belief, namely, intelligence, character, and good will."[21] Similarly Brooks believes that there are five qualities to be desired: character, intelligence, desire to be of service, good will, and good health. These qualities he analyzes in detail, carefully subdividing three of the five into their constituents. Further, he presents a theory of "comparative and superlative values" and a theory concerning the causes and effects of many of these qualities which are important to both a general knowledge of rhetoric and a specific understanding of his rhetorical system. For these reasons I believe we are justified in devoting considerable time to this mode of persuasion.[22]

The point of view concerning "character" should be made clear. Brooks places at the heart of all persuasion the presence of a moral character which can stand the test of men's scrutiny; he says that Truth can prevail—and preaching is designed to make it prevail—only if there is moral goodness in the speaker.[23] But what elements comprise "character"?

First is "faithfulness," which "touches almost all the difficulties in the way of constraint of dictation which a minister meets with from his people."[24] To this he adds "honesty," "spirituality," and "the proper degree of reserve," the third being not only a desirable asset for the speaker but also a source of power in that it will create realities, not intangible speculations.[25] A further quality associated with these is "courage," which Brooks terms the indispensable re-

[20] *Ibid.*, p. 8. We should observe that Brooks' concept of ethical persuasion embodies both the known or evident qualities of the speaker and those revealed through the speech. He is concerned with the presence of these qualities as persuasive factors; the means by which they are transmitted are not specifically mentioned.

[21] Lane Cooper, *The Rhetoric of Aristotle* (New York: D. Appleton and Co., 1932), 91–92.

[22] Some of these classifications are implicit in Brooks' writings rather than always identified by these terms.

[23] *Lectures on Preaching*, 50–51.

[24] *Ibid.*, p. 102; also, "The Teaching of Religion," in *Essays and Addresses*, 59–60.

[25] *Lectures on Preaching*, p. 120.

quisite of any good minister. Courage is more than an abstract quality; it is a sign of other qualities which are also factors in persuasion: independence, respect for men's higher natures, and a desire to do good.[26]

Additional constituents of "character" conceived by Brooks to be important to the preacher are "humility," "breadth of character," "personal piety," and "deep originality." Believing that self-conceit and self-indulgence are common and dangerous to the preacher, he analyzes the problem in some detail, suggesting as a possible solution the rising above complacent acceptance of one's privileges. "Breadth of character" is not a quality found in the abstract; it results from tolerance of other believers and from earnestness in making Truth prevail, thus being a quality which can be acquired by conscious manipulation. "Deep originality" is similarly important to the preacher, Brooks believes, because of certain influences tending to repress the individuality of the ministry. To avoid an incorrect impression, however, we should observe Brooks' insistence upon more than mere individuality. He advises: "be full of your own faith and your own love" and as a result be "deeply original"—with emphasis upon the depth of originality in order that there may be the persuasiveness of a "devoted heart to speak from and the fiery words to speak."[27]

As we proceed to those qualities appertaining to "intelligence," we should note Brooks' stress upon intelligent preaching. In fact, one of the few adverse criticisms he ever made of fellow preachers was that upon Dwight L. Moody: "I suppose the power of an uneducated man like Mr. Moody is doing something to discredit the necessity of study among ministers and to tempt men to rely upon spontaneousness and inspiration."[28] This stress is perhaps inevitable in the light of Brooks' thorough training at Harvard and the seminary at Alexandria, Virginia, and of his practice in subsequent years of the habits acquired in his college days.

The qualities appertaining to "intelligence" are three: awareness of what is transpiring around one, mental aliveness, and thorough mental preparation. The first, in that it advises the preacher to "be

[26] *Ibid.*, 59–60; also, "Courage," in *Essays and Addresses*, 319–335.

[27] "The Teaching of Religion," in *Essays and Addresses*, 58–59; also, *Lectures on Preaching*, 24 and 60–69.

[28] *Ibid.*, p. 147; also, "The Purposes of Scholarship" and "Milton as an Educator," in *Essays and Addresses*, 247–272 and 300–318, respectively.

of the age," may appear to be contradictory to Brooks' philosophy of preaching as "Truth plus Personality." But there is no contradiction, for Brooks believes that while Truth does not change, the interpreter of it should keep alive so as to note intelligently the changing circumstances of men's needs. Consider his words: "The noblest ministries in the Church are those of old men who have kept the freshness of their youth."[29]

"Mental aliveness" is so important to Brooks that at one time he placed it first in a list of six qualities of the ideal Priesthood.[30] And of great importance—as we shall observe when we consider Brooks' analysis of the preparation of the speaker—is the third quality, "thorough mental preparation." To him this implies not only theological training but also broad education, systematically directed toward a specific goal; it involves intellectual development through study, contact with human nature, and the serious interpretation and criticism of what one receives through these means.[31]

But to Brooks, "character" and "intelligence" are not enough. He presents a body of elements appertaining to the "desire to be of service," such as: mental and spiritual unselfishness, freedom from self-consciousness, gravity, hopefulness and enthusiasm, and a great joy from one's work. Considered as a group, these represent Brooks' stress upon *communication,* for he urges the speaker not to content himself with the possession of knowledge but to think of the "message" which he has to deliver, of the fact that he is a "witness" of the Truth and has the task of transmitting it.[32]

The practical aspect of Brooks' theory is again seen in his treatment of the second of these qualities, "freedom from self-consciousness." Concerning this he asks two questions: "first, how shall I do it most effectively for others?"; second, "how shall I do it most creditably for myself?" He says that the extent to which the speaker considers the first question is a sign of his fitness, for this shows the dominance of the impulse to serve others. He concludes the analysis of this quality by saying: "the second question disappears out of your work in proportion as the first question grows intense."[33]

To Brooks "gravity" is not a cloak of solemnity but is "that grave and serious way of looking at life which, while it never repels

[29] *Lectures on Preaching,* 29–30.
[30] Cf. "The Priesthood."
[31] *Lectures on Preaching,* 33–34.
[32] *Ibid.,* 14–15; also, *The Bohlen Lectures,* 111–115.
[33] *Lectures on Preaching,* p. 51.

the true light-heartedness of pure and trustful hearts, welcomes into a manifest sympathy the souls of men who are oppressed and burdened."[34] Concerning "joy in one's work," he says: "If you can feel a simple delight in what you have to do as a minister, the better will you succeed in the task of ministering to others and persuading others."[35]

In addition to "character," "intelligence," and "desire to be of service," there are two other qualities of the speaker: "good will" and "good health." If at first thought they appear to be superficial, further analysis will disclose their fundamental relation to persuasion. Brooks believes the former to be important because it is the means of effectively transmitting the speech, for it places the speaker and the audience upon a friendly plane, creates cooperative attitudes, and insures the proper breadth of appeal in the speech. It is not mere sympathy, but a profound respect for all "the men and women we preach to, simply as men and women."[36] Similarly, "good health" is to Brooks more than an outward element; it is a part "of that total self-consecration which cannot be divided, and which all together makes you the medium through which God may reach His children's lives."[37]

To conclude at this point the survey of the qualities of the speaker would be to miss Brooks' analysis, for over these five major qualities he presents an enveloping concept: the concept of comparative and superlative values. He believes that while the possession of each quality is desirable, to possess it in the highest degree is more desirable. Each quality is capable of cultivation and of development toward that position for which God made man. This principle is important, for it insists upon a dynamic speaker, one who is cultivating each quality.[38]

Nor is this the extent of Brooks' treatment of the speaker's qualities. Of importance is his practical analysis of the sources and effects of these qualities, an analysis not to be confused with his inquiry into the methods of preparation, to be considered later. To state the relationships briefly, we discover that Brooks reasons in this manner: these qualities are caused by "value for the human

[34] *Ibid.*, 54–55.
[35] *Ibid.*, 53–54.
[36] *Ibid.*, 52–53
[37] *Ibid.*, p. 41.
[38] *Ibid.*, p. 42.

soul." This "value for the human soul" is caused by two conditions: "knowledge of the Spirit of the Lord" (the reason for a strong inner life) and "the working for a soul." It is a series of causal relationships, with spiritual intuition and devotion to one's soul and others' souls as the prime factors.[39]

Developing Brooks' reasoning further, we observe that "value for the human soul," which results from knowledge of the "Spirit of the Lord" in the universe and from knowledge of and working for the "spiritual" element in the human being, causes several qualities to develop: courage, simplicity, a sense of absolute reality, the coinciding of conscience and taste, freedom from narrowness, a conception of the value of humanity and individuals, and a strong spiritual life within the preacher.

Finally, in this survey of the qualities of the speaker we come to the results which follow from the possession of these qualities. Brooks is specific in enumerating the following results: vitalization of the art of preaching, creation of a good style, development within the preacher's life of the highest qualities of manhood, and creation within the preacher of a better outlook upon humanity than could otherwise be possible.[40]

Supplementing this thorough consideration of the qualities of the speaker is Brooks' rather important contribution to Ethos, namely, the preparation of the speaker. That he considers this important may be observed in all of his writings. He says that in the majority of cases failure in the ministry can be attributed to faulty preparation, also that the preacher's life must be one of large accumulation, not only from particular reading but also from wide contacts and extensive meditation. Implicitly, although not separately presented by Brooks, we find the following four means of preparation: through reading and study; through knowledge of men; through association with the Infinite; and through careful discipline.

Brooks insists that the speaker read and study; he deplores the empty head which "glows and burns, the more hollow and thin and dry it grows."[41] But the acquisition of abstract knowledge is not enough. Preparation should seek to make the study "more intimate than the accumulation of knowledge;" it should try to transform it

[39] *Ibid.*, chapter on "Value for the Human Soul." Also, *The Bohlen Lectures*, pp. 47, 273.

[40] *Lectures on Preaching*, pp. 26, 70–72, 148, 255, and 280.

[41] *Ibid.*, 44–45.

into doctrine, should adapt it to the speaker and his purposes. Further, the preacher should indulge in more than "narrow" study—the reading only of sermons, commentaries on the Bible, or special materials for a specific speech. Brooks pleads for broad study; he directs us to language and oratory, to literature, art, and science, and to history and philosophy.[42]

Preparation through knowledge of men is also regarded as essential. So strongly does Brooks feel this that he considers specious the argument that ministers and duties should be classified, with some men preachers and some pastors. These duties are not rivals, he says, but are complementary, with the pastoral duty bringing the preacher into contact with men and assisting him in his preparation.[43]

If we ask how the speaker can secure both the broad knowledge of humanity and the necessary understanding of specific listeners, we find an answer. To the first it is "broad experience," with travel and "large accumulation" as the means; to the second it is "careful study of the types of persons in one's audience," of the reasons why they are present, of their backgrounds, and of their motives in life.[44] (Brooks' careful study of the Audience will be considered later.)

The third means of preparation is related to Brooks' concept of Truth and Personality as the elements of preaching. Of this he says: "It (preparation) must be nothing less than the making of a man. . . Everything that opens their lives towards God and towards man makes part of their education." Again he reasons that the "ability to enter into the soul-experiences of others" requires "profound communion with God."[45]

The fourth means of preparation, through discipline, involves the use of "routine" as a servant, of systematic habits of work, and of "honest" methods of study and thinking. In contrasting the superficial workman, who is pious and intelligent but whose work is at loose ends, with the honest workman, Brooks insists upon faithfulness and thoroughness. If the preacher can lift himself above "the passion for expedients," if he can force himself to "beware of hobbies," he can count himself fortunate to have prepared himself for effectiveness. [46]

[42] *Ibid.*, pp. 48, 74, and 145–147.
[43] *Ibid.*, p. 76,
[44] *Ibid.*, pp. 183–216; also, cf. "The Priesthood."
[45] *Lectures on Preaching*, p. 9; also, cf. "The Priesthood."
[46] *Lectures on Preaching*, 93–101.

Pathos

To Brooks, Pathos is also a fundamental factor in persuasion. As if to justify breadth of appeal, which will use more than one mode of persuasion, he says: "the intellectual and the spiritual belong together; logical arrangement of thought has real connection with a sincere desire to do right." He says that the thinking process tempers one's desire to do right or wrong: "the more you mean to do all the right, the more clearly your whole thinking processes will dispose themselves." He is emphatic in saying that a speech of one appeal will fail: "The sermon which only argues is almost sure to argue in vain, and the sermon which only exhorts is like a man who blows the wood and coal to which he has not first put a light."[47]

What contribution Brooks makes at this point is not in the thoroughness of his analysis of the emotions; in fact, such an analysis is virtually lacking. Brooks' focus is upon the uses of Pathos, upon the plane of the appeals. First, he insists upon *high* appeals, especially those bearing upon the motive of service. He makes this emphasis clear in a discussion of Jesus' methods, involving love, duty, and righteousness. Developing this view, he says that the sermon should never be used to advance a personal cause or petty program or some small group; rather, it should ask: What social good can be done through this appeal?[48] Again, he asks that "the sermon must never set a standard which it is not really meant that men should try to realize in life."[49] Finally, Brooks says that the appeal of the sermon should be considered in the light of the accompanying church service so that there will be both harmony and variety.[50]

Logical Argument

To Brooks, Logical Argument is not the element with which we are familiar after having studied Aristotle and others in the classical rhetorical tradition. He considers materials pertinent to argument, but his point of view is different in that he does not develop the elements of inductive and deductive reasoning. Concerning the principles of argument, Brooks advises the preacher to seek that kind of preach-

[47] *Ibid.*, 130–131; also, "The Teaching of Religion," in *Essays and Addresses*, 37–40.

[48] *The Bohlen Lectures*, 55–59; "The Teaching of Religion," in *Essays and Addresses*, p. 43; *Lectures on Preaching*, pp. 27 and 141.

[49] *Ibid.*, p. 142.

[50] *Ibid.*, p. 142.

ing which is "strong in its appeal to authority, wide in its grasp of truth, convincing in its appeal to reason."[51] He advises, however, against indiscriminate use of references to established sources through quotations, saying that they are signs of crudeness, that they "show an undigested knowledge; they lose the power of personality; they daub the wall with untempered mortar." The point is that in one's thinking a close relationship should be established between the "eternal truths" and the logical processes of the universe, and one's own ideas.[52]

Brooks advises but sparing use of exposition, saying that within limits it is useful, but "the preaching which is wholly exposition men are apt to find dull and pointless." He believes that even though clarity is needed, something more is needed, for the listener is more than a reasoning being."[53]

Concerning the use of the traditional processes of argument (induction and deduction), Brooks says virtually nothing, even minimizing the need for such proofs. Because this may appear to contradict his statement "convincing in its appeal to reason," and because it appears to make his rhetorical system incomplete, we should seek an explanation. Our investigation will reveal not an alarming omission but a substitute means of argument that is quite distinctive with Brooks.

Commenting upon Jesus' mode of persuasion, he says: "Jesus and Socrates are absolutely incomparable. They start from different points. They journey by different roads. . . The one reveals; the other argues."[54] In investigating the reason for this point of view, we discover a set of forces playing upon Brooks and affecting his concept of proofs and of persuasion in general. We see that in place of logical proofs of the classical tradition he uses Analogy as *a means of suggestion.* It is important to note the phrase "means of suggestion," for in using the analogy, Brooks' sermons are based largely upon suggestion. The analogy suggest relationships that may form the basis of the topical development of the sermon, not necessarily the materials of inductive proof.[55]

[51] *Ibid.*, p. 132.

[52] *Ibid.*, 159–160.

[53] *Ibid.*, p. 130.

[54] *The Bohlen Lectures,* p. 48.

[55] I have made a study of the probable causes of this view and practice, finding influences—in addition to the attitude toward sermon material as "truth" rather than "probability"—in Coleridge, F. D. Maurice, Robertson, and

Brooks' philosophy of "the modes of persuasion" can be caught in his words, some of which have been previously quoted: "The preaching which is strong in its appeal to authority, wide in its grasp of truth, convincing in its appeal to reason, and earnest in its address to the conscience and heart, all these at once—that preaching comes nearest to the type of the apostolical epistles, is the most complete and so the most powerful approach of truth to the whole man."[56]

Speech Preparation

In addition to discussing purposes of speaking, topics, and the modes of persuasion, Brooks provides us with a body of material on speech-preparation, material which can be most conveniently surveyed in relation to Invention.[57]

At the outset we observe Brooks' stress upon careful preparation at all stages, a stress which appears especially in his criticism of "special preparation." We can most advantageously survey Brooks' theories by considering the following problems: the selection of the topic, "special preparation," and the form which the speech should take—outline or manuscript. Brooks advises a well-planned procedure for the selection of the topic, using three elements previously mentioned: "the bent of the preacher's inclination," "the symmetry and scale of his preaching," and "the peculiar needs of his people." [58] While this is the order in which these elements usually present themselves to the preacher, the order should be reversed—begin with the people.[59]

In discussing preparation after the topic has been chosen, Brooks reverts to his theories of the properly qualified speaker, believing that there is correlation between the well-prepared speaker and the opportunity for freedom from a long period spent on "special preparation." He describes the purpose and scope of "special preparation" as consisting "mostly in bringing together, and arranging, and illuminating a knowledge of the subject and thought about it which has already been in the possession of the speaker." Little time should be spent upon "special preparation," he believes, for over-use of it is a sign

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others, who either differed from or were actually opposed to the classical tradition of logic and rhetoric.

[56] *Lectures on Preaching*, p. 132.

[57] Some of this material is also pertinent to Memory, but will also be considered here.

[58] *Lectures on Preaching*, p. 153.

[59] We anticipate here Brooks' thorough analysis of the Audience, to be considered next.

of inexperience or inadequate preparation. This is the principle: "special preparation" should be just extensive enough to bring together the materials "filed away" in a well-ordered, well-prepared mind; it should not consist of much reading or of the attempt to compensate for lack of previous preparation. Specific reading for a particular speech is inadvisable; on the contrary, extensive and planned reading is better.[60]

In discussing whether the outline or the manuscript is more desirable, Brooks believes that there is no inflexible rule. He presents eight advantages of the former: alertness, liveliness, activity, warmth, steadiness, readiness, poise and self-possession, and independence of artificial help. In contrast are three for the manuscript form and method, especially when Delivery is considered: faithfulness, deliberateness, and self-restraint. Weighing these advantages, he concludes that circumstances or differences in temperaments and abilities in speakers or listeners make a flexible rule necessary.[61]

We observe that Brooks' contributions on speech-preparation are not elaborate or distinctive. However, there is merit in his emphasis upon the reliance on the speaker's broad preparation, careful selection of the topic, and careful examination of the advantages of the outline and manuscript methods before the final step in preparation is taken.

Audience

Just as Aristotle provides us with a thorough analysis of types of people as related to emotions, virtues and vices, times of life, and states of fortune, so does Brooks provide an elaborate study of the audience, with particular reference to the church congregation. To Brooks this is an important topic both separately and in relation to the other constituents of rhetoric; in fact, he insists that a primary concern of the good speaker is a knowledge of the audience, its characteristics, the types of persons composing it, and the problems growing out of the relations between speaker and audience.[62]

First, Brooks conceives of the audience as an approximation of humanity, as "perhaps the best representative assembly of humanity that you can find in the world." Secondly, he sees in the audience also a body with a new character which is not in any of the individ-

[60] *Lectures on Preaching,* p. 157.

[61] *Ibid.,* 170–172.

[62] Brooks' theories concerning the Audience are presented in *Lectures on Preaching,* 182–216. Additional observations are found in "The Teaching of Religion," in *Essays and Addresses,* 56–57.

uals composing it. This, Brooks says, necessitates the speaker's attention to both individual and group characteristics. Thirdly, he sees this "company of men" as possessing at least four characteristics: spontaneousness and liberty, a higher standard of thought and taste than that of the individual, greater receptivity and responsiveness than in the individual, and a certain irresponsibility of individuals within the audience. His reasoning is as follows: Greater receptivity is present because many sources of antagonism are removed and the pride of argument is either absent or modified; this receptivity results in responsiveness which assists the speaker; the responsiveness is counterbalanced by irresponsibility, a quickness to feel, but a slowness to decide or to take decisive action because of the subordination of individual responsibility.

Of probably even more value than this analysis of the general characteristics of an audience is Brooks' study of the types and classes of people that a preacher finds after a more than passing contact with his congregation. These classes are four in number, the classification being based upon their reasons for attending church services and their mental and emotional relations to the church.

The first group is composed of those persons who "peculiarly represent the church to the world." These persons live in the church, their lives being bound up with the institution. This group assists the preacher by reminding him of his proper place in the church organization (making him realize that *he* is not the institution) and by providing a permanent foundation upon which the organization and the preacher can build a program. This group, however, can in four ways cause the preacher to lose his "larger effectiveness"; it can make the organization and the sermons too exclusive; it can cause the preacher to lose sight of those needing his ministry more than it does; it can cause the preacher to lose sight of the typical responses of typical hearers; it can cause the preacher to restrict his preaching to the narrow and dogmatic points of view which it may possess.

The second group is at the other extreme. Composed of the "supercilious hearer," it is skeptical about the usual sermon material and may cause trouble by irritating larger groups and by making the preacher too conscious of its presence. But in three respects it may be helpful: it is a sign that the church and preacher have a mission; it keeps the preacher from becoming "set"; it can be capitalized upon to the extent of making "the whole sermon more true and conscientious, more complete in the best qualities that belong to all good sermons."

The third group is composed of those who come to church from habit. It, Brooks believes, contains two healthy influences upon the preacher: an encouragement born of the hope that this group will possibly become more than passively interested; a stimulation in the form of both shaming and inspiring the preacher to remember his duty and to preach the "plainest, and directest, and tersest truth."

The fourth group, which constitutes the chief and most inspiring interest, is composed of those who "in any way are to be characterized as earnest seekers after truth." This group calls out the best in a preacher; it also provides the most certain tests of the preacher, for "any man who has not in him the power of quick response to the appeal of spiritual hunger lacks a fundamental quality of the true preacher." This is the group which the preacher must have in mind while preparing his sermon as well as while delivering it. Further, this group provides a final valuable influence, Brooks believes, in stimulating the preacher to make his speaking vital, to sense the relations between his sermon and the needs of his listeners. (Brooks does include a variable factor, strangers who "have wandered in"; but he is more concerned with the four groups of the usual congregation than with this group.)

In addition to providing us with an analysis of the audience, Brooks studies the problems arising from the contacts between speaker and audience. He presents practical suggestions concerning the means by which the audience can assist the speaker and the things which the audience requires of the speaker. The means of assistance are two: providing the inspiration of numbers; providing the best test of his work. The first is obvious; the second is true, because while it is not safe to judge the effect of one's work by any one individual, "when a congregation pronounces on it, not by the unreliable witness of praise, but by the testimony of its evidently changed condition, its higher life, its more complete devotion, it is never wrong."

Lest the preacher fall into the trap of over-indulgence from his congregation, Brooks suggests attempting to maintain a balance by "neither courting nor despising the popular applause, to feel it as every healthy man feels the approval of his fellowmen, and yet never to be beguiled by it from that which is the only true object of our work, God's truth and men's salvation."

Finally, Brooks considers the requirements made of the speaker by the audience: think realistically of it; know its needs; and adapt

the message to those needs. Above all, Brooks is insisting upon realistic thought and action in considering one's listeners—another indication of the practicability of this body of rhetorical theory.

As we conclude this survey of Brook's theories concerning Invention, we should observe certain points of emphasis and distinctiveness. In relation to the classical tradition he is somewhat distinctive in each of eight respects: 1) he rigidly holds to the concept of possession by the speaker of the five-fold set of qualities; 2) he analyzes in great detail a number of specific qualities subordinate to the five major ones; 3) he studies in detail the sources and results of these qualities; 4) he adds to our knowledge of the speaker's qualities by developing the concept of "comparative and superlative values"; 5) he provides a detailed exposition of the four means of preparation of the speaker; 6) he implies in his treatises, and practices in his preaching, a substitute for logical proof that is somewhat novel in rhetorical theory; 7) he provides a body of literature concerning speech-preparation that is comparatively elaborate; 8) he provides another study of the Audience that represents a contribution to rhetorical literature.

DISPOSITION

Disposition is that constituent of rhetoric which is concerned with the arrangement of materials. In *De Oratore* Cicero says concerning Disposition: "(the duty of the speaker is) next, to dispose and arrange his matter, not only in a certain order, but with a sort of power and judgment." Again he says that its purpose is "to arrange what you have invented." [63] Disposition embodies, essentially, two elements: the plan of the speech in the large; the specific parts of the speech.

In approaching this rhetorical problem, Brooks insists that there is justification for a study of the organization of the speech and also that a precise plan of organization should be considered. Lest objection be raised to a treatment of this problem on the grounds of artificiality, Brooks says that the real problem is not one of making a plan but of developing that plan with adequate material. He believes that within the limits of a clear-cut plan there is room for full play of individuality; and conversely, that within the individuality of each effective speaker there is a desire for organization and a plan.[64]

[63] *De Oratore*, Bohn Edition, pp. 178 and 242.
[64] *Lectures on Preaching*, pp. 147 and 177–178.

Specifically, Brooks has four observations: 1) the audience welcomes not only a clear plan but also a definite statement of that outline; 2) because a speech composition is unlike a "picture which, once painted, stands altogether before the eye" and cannot be as easily comprehended or retained, particular care must be exercised in the organization; 3) there is a beneficial result for the speaker in the presence of a clear-cut plan; 4) there is a beneficial result for the listeners. [65]

Brooks is somewhat brief, although specific, as to the best plan to use. His outline contains three typical essentials: 1) statement of the subject; 2) division into heads; 3) recapitulation at the end. In addition, he suggests clear, precise statements of the course of the sermon and carefully marked divisions of the thoughts.[66]

Without doubt Brooks appears to be too brief in his treatment of Disposition. Certainly in contrast to the more elaborate studies by several other rhetoricians he may seem superficial. But in stressing the need for—and the values of—a good plan of the speech, he is emphasizing a doctrine often neglected in practice if not in theory.

STYLE

Style is that constituent of rhetoric which is concerned with problems of language, with the expression or phrasing of the selected and arranged materials. In *De Oratore* Cicero says concerning Style: "(the duty of the speaker is) then to clothe and deck his thoughts with language." [67]

Brooks has some definite suggestion concerning Style, including both an analysis of its component parts and a consideration of the sources of good style. He justifies a study of Style on the grounds that no real expedient is unworthy, that any legitimate means may be used to move men's souls, and that the full effect of the materials of the speech cannot be secured without a consideration of the problems of language and expression.[68]

At the outset he warns us against placing Style on the plane of a mere technique, saying that it should be considered in relation to thought. "Training in style is to make it so simple and flexible an organ that through it the moving and changing thought can utter

[65] *Ibid.*, p. 178.
[66] *Ibid.*, 177–178.
[67] *De Oratore*, Bohn Edition, pp. 178 and 242.
[68] *Lectures on Preaching*, p. 179.

itself freely." We find that he desires a style to be clear and simple, strong and flexible, individual, constantly growing, full of splendor but not ornamental or "finished," and varied.[69]

Especially should we consider here those theories appertaining to "the progressive style" and "variety." Brooks insists that style can be progressive or evolving, saying that it is capable of indefinite cultivation as long as it is representative of the person creating it. "A style which is really a man's own will grow as long as he grows." [70] Emphatically he asks for variety in the speech, analyzing this element to the point of suggesting three means of securing it: 1) a mind which is well developed; 2) a soul which is closely related to the "spirit of the universe;" 3) certain rhetorical means such as the illustration and the quotation.[71]

Brooks says of the illustration that it creates clearness and splendor, two of the desirable qualities of style. Its sources are observations from every-day experience, personal references to one's own life, and materials from the Bible. From the first source may come narratives, instances devoid of the chronological element, and analogies. The second source, he believes, contains both weaknesses and advantages, the latter being supreme if the speaker possesses those qualities previously described as essential, for in that event good taste, wisdom, and a desire to serve others will cause the proper illustrations to be used. Materials from the Bible are valuable sources of illustrative matter for three reasons: 1) "there is an essential connection with each other" which makes them come together with "peculiar sympathy and fitness"; 2) there is a distance from the present scene which makes them "timeless and passionless, as it were, and so enables us to use them purely as ornament or illustration, without the danger of their introducing side issues from their own life"; 3) there is value in reviving and preserving people's acquaintance with the Old Testament, "which is always falling into decay." [72]

Brooks sanctions the use of the current illustration, but warns us that "it brings in its own associations and prejudices; it is too alive." However, it is otherwise acceptable. The tests of the illustration are simple but important; it is good if it is "true, has real relations to the subject which it illustrates"; it is good if it calls attention *to* the truth rather than *away from* the truth.[73]

[69] *Ibid.*, pp. 148, 151, and 163–165.
[70] *Ibid.*, p. 165.
[71] *Ibid.*, p. 175.
[72] *Ibid.*, pp. 117 and 176–177.
[73] *Ibid.*, p. 176.

Concerning the use of quotations, Brooks has little to say—and that is primarily in the form of a warning. By implication we learn that he believes quotations to have value in giving authority to the sermon and in giving evidence of reading by the speaker, as well as in providing variety in the speech. He believes, however, that too frequent use of quotations is a sign of incomplete study and suggests that the preacher has made a dinner "from a hurried raid upon the caterer's" rather than from "the resources of a constantly well-furnished house." He calls the use of "constant quotations . . . a sign of . . . undigested knowledge." [74]

Finally, Brooks considers the sources of good style, providing us with four suggestions: 1) possess a richly stored mind; 2) possess a growing mind; 3) maintain the proper view of what style is for, that "it is an instrument and not an end"; 4) practice diligently in writing—"I think that it is good for every minister to write something besides sermons—books, articles, essays, at least letters." [75]

From this survey we observe that Brooks has a wholesome philosophy of Style, emphasizing the fact that it should not be conceived of as an end but as a means of achieving clarity and of making the transmission of the subject-matter pleasant. Further, we observe that he analyzes carefully the illustration and the sources of good style. In the latter practice he again illustrates the practicability of his rhetorical theory.

MEMORY

Memory is that constituent of rhetoric concerned with the storing up in the mind of principles, bodies of factual material, lines of argument, and phrases which will be ready for use in a speech. Memory embodies more than the retention of words—of committing a speech to memory—even though this is one aspect of Memory and frequently the only one associated with it.[76]

[74] *Ibid.*, p. 159.

[75] *Ibid.*, pp. 147–148 and 164–165.

[76] For the most satisfactory explanation of Memory which I have read, I am indebted to Professor Harry Caplan, of Cornell University, who in a paper entitled "Mnemonics for the Ancient Public Speakers" emphasizes the fact that to Aristotle, Cicero, and Quintilian, Memory meant more than the retention of words. Professor Caplan refers to Aristotle's *Topics*, where we read: "You should try, moreover, to master the heads under which other arguments tend mostly to fall . . . it is of great advantage to be well up in regard to first principles . . . so these habits too will make a man readier in reasoning, because he has his premisses classified." Of Memory in the high period of Roman

I have emphasized this broad concept of Memory in order to clarify its meaning and also to prepare the way for a discussion of Brooks, who offers much concerning that aspect of Memory which means "the speaker's whole command of his material."

As we observed in connection with the topic of the preparation of the speech (Invention), Brooks advises careful preparation, which means not only systematic work but also reliance upon a "large accumulation" of material rather than upon "undigested bits" gained from hurried, last-minute preparation. By implication, at least, this means the careful development of Memory, the accumulating and digesting of large bodies of material, the categorizing of the lines of thought and illustrative details, and "special preparation," which "should be just extensive enough to bring together, arrange, and illuminate" a knowledge of the subject. This "special preparation" should not consist of much reading or of the attempt to compensate for the lack of previous reading.[77]

If we supplement Brooks' theories with his practice, we observe that he makes a contribution in precept and example to rhetoric by stressing the importance of Memory.[78]

DELIVERY

Delivery is that constituent of rhetoric which is concerned with oral and visible expression. In *De Oratore* Cicero speaks of the function of the speaker "to deliver it (the speech) with due action . . ." [79] The following are commonly accepted as component parts of Delivery: the analysis of the modes of delivery; the analysis of the elements of voice and gesture; and the analysis of the qualities of delivery.

If we were to use a quantitative method in appraising Brooks'

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rhetoric, Professor Caplan says: "It includes the speaker's whole command of his material in the economy of his constructive plan and in relation to rebuttal."

[77] *Lectures on Preaching*, p. 157.

[78] From his biographer, A. V. G. Allen, we learn that Brooks jotted down in his note-book "thousands of suggestions." We also know of Brooks' practice of spending a period of six months in reading widely in Milton, of devoting the years 1864 and 1865 to a methodical study of history, and of planning reading in literature, philosophy, biography, and travel. He was thus creating a broad background of information which was used in the preparation of sermons and addresses upon many subjects.

[79] *De Oratore*, Bohn Edition, p. 242.

interest in, and his observations concerning, the problems of oral expression, we should conclude that he has little concern for this phase of rhetorical theory. However, in spite of one derogatory comment upon teachers of oratory,[80] he does have a positive philosophy of expression, or delivery. Further, he is concerned with the relation of expression to thought, a relation that is fundamental.

Brooks conceives of delivery as a vehicle by which thought may be re-created in the most natural manner. Here he is consistent with his view that the sermon should not be thought of as a work of fine art but as a force for moving men's souls. Specifically, he is not concerned with matters of voice and gesture, but with modes of delivery and qualities of delivery.

As we observed in the section devoted to the preparation of the speech (Invention), Brooks is concerned with the relative merits of speaking extempore and from manuscript. Believing this problem to be related to the expression of thought, he analyzes the two methods in some detail. With respect to the relative merits and the means of making a choice between the two, he says: 1) the type of speaker is a determining factor, for "some men are made for manuscripts, and some for the open platform"; 2) the use of both methods by the same speaker upon different occasions will be beneficial, for "you will write better if you often speak without notes, and you will speak better if you often give yourself the discipline of writing"; 3) the proportion of extempore speaking may be increased as the man grows older in the ministry; 4) there are some kinds of discourses which can never be written, for "some medicines you must mix on the spot; others you may mix beforehand and they will keep their power." Concluding, he says: "The rest must be left to a man's own knowledge of himself and that personal good sense which lies behind all homiletics." [81]

Throughout all of Brooks' observations upon preaching there are echoes of his insistence upon awareness of the audience in both preparation and delivery. This principle enters into his appraisal of the methods of delivery and also the manner of speaking, irrespective of the method. The principle also operates to create a comple-

[80] "Of oratory, and all the marvellous mysterious ways of those who teach it, I dare say nothing; I believe in the true elocution teacher, as I believe in the existence of Halley's comet, which comes into sight of this earth once in about seventy-six years." (*Lectures on Preaching*, 178–179).

[81] *Ibid.*, 171–175.

mentary requirement: the avoidance of superficiality in delivery, which to Brooks means the avoidance of imitation and the avoidance of the belief that delivery is an end rather than a means to the end of the communication of thought. An anecdote cited by Brooks well illustrates his view on this principle:

> "The obtuseness of the imitator is amazing. I remember going years ago with an intelligent friend to hear a great orator lecture. The discourse was rich, thoughtful, glowing, and delightful. As we came away my companion seemed meditative. By and by he said, "Did you see where his power lay?" I felt unable to analyze and epitomize in an instant such a complex result, and meekly I said, "No, did you?" "Yes," he replied briskly, "I watched him and it is in the double motion of his hand. When he wanted to solemnize and calm and subdue us he turned the palm of his hand down; when he wanted to elevate and inspire us he turned the palm of his hand up. That was it." And that was all the man had seen in an eloquent speech. He was no fool, but he was an imitator. He was looking for a single secret for a multifarious effect. I suppose he has gone on from that day to this turning his hand upside down and downside up and wondering that nobody is either solemnized or inspired." [82]

Even if comparatively brief, Brooks' theories appertaining to Delivery are valuable in stressing the principle of *communication* rather than *display* and in analyzing two factors which are means to this end: awareness of the audience in both preparation and oral expression, and genuineness—the avoidance of superficiality and artificiality.

Brooks' body of rhetorical theory is of value to us today. It is a systematic, complete, and practical study; it is on a high ethical plane; it has a logical basis of cause and effect; and it contains much illustrative material which both supplements and reinforces the theory. The average person, interested in human nature, will find it a valuable treatise upon "applied psychology." The preacher will find it a practical and stimulating body of literature. The secular speaker will find it similarly practical, applicable with but few exceptions to any type of speaking. The student of rhetorical theory will find in Brooks not only a good speaker but also a rhetorician who may add something to one's store of knowledge concerning "the available means of persuasion."

[82] *Ibid.*, 167–168.

THE ORATORY OF JAMES WILSON OF PENNSYLVANIA*

(1742–1798)

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PUBLIC speaking was a primary means of effectiveness for the men who established the political system of the United States. Most of our studies of those men, however, have been devoted to the ideas and institutions they developed, while the speeches by which they formed and directed public opinion have received only passing notice. In a measure this is true of James Wilson. His political contributions, though given little popular acclaim, have been recognized; but his speeches have never received careful study.

Wilson, we know, was a leader in the Revolution, a delegate in the Continental Congress, a member of the Constitutional Convention, and a justice of the Supreme Court of the United States.[1] He has been called "the profoundest theorist of the Revolution," "one of the ablest and wisest of the Constitution's framers," "one of the most learned jurists this country has ever seen," "the first and greatest political scientist of democracy."[2]

* The writer of this paper is indebted to Burton Alva Konkle of Swarthmore, Pennsylvania, for the privilege of examining the manuscript of his *Life and Times of James Wilson;* and to Julian P. Boyd, Librarian of the Historical Society of Pennsylvania, Randolph G. Adams, Director of the William L. Clements Library at the University of Michigan, Thomas P. Martin of the Library of Congress, Andrew Bennett, Secretary of St. Andrews University, and the Reference Division of the University of Washington Library for assistance in securing source materials.

[1] In spite of his achievements Wilson's name remained in relative oblivion for many years, partly because of the enmity of the Antifederalists and their rise to power in the election of 1800 shortly after Wilson's death, and partly because his life ended under a heavy burden of debt after the loss of his fortune from over-investment in land. This blot upon his reputation was removed a few years later. See Griffith J. McRee, *Life and Correspondence of James Iredell,* Appleton, 1897–1898, II, pp. 527, 533, 535; Charles A. Beard, *Economic Interpretation of the Constitution,* Macmillan, 1925, pp. 147–148; Burton Alva Konkle, *Life and Times of James Wilson,* Mss., pp. 448–452, 474–481; and Konkle, *Life and Times of Thomas Smith,* Philadelphia, Campion, 1904, pp. 119–120.

[2] Similar appreciations of James Wilson have been given by Baldwin, Beard, Bryce, Cooley, Curtis, Elliott, Farrand, Fiske, Harlan, McLaughlin,

In all his public activities speaking was a significant factor. He was a prominent member of the Pennsylvania bar, an important speaker in the Convention for the Province of Pennsylvania which met to elect delegates to the Second Continental Congress in 1775, and an active member of that Congress. His voice was influential in forming the Constitution, powerful in securing Pennsylvania's ratification of it, and effective in expounding the new American political science embodied in that instrument.[3]

James Wilson's whole career as a speaker may be considered in four phases: First, his background and preparation. Second, the years prior to 1787 which included most of his law practice and his service in the Pennsylvania Convention and the Continental Congress. Third, the period from 1787 to 1790, when he was a member of the Constitutional Convention, the Pennsylvania Ratifying Convention, and the Pennsylvania Constitutional Convention. Fourth, the years after 1790 when he was a member of the United States Supreme Court and delivered his lectures on law at the College of Philadelphia.

I

When Wilson came to America in 1765,[4] he had the best education Scotland afforded. His birthplace and early home had been in

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McMaster, Mitchell, Tyler, Theodore Roosevelt, and Woodrow Wilson. Most of the tributes are summarized in Lucien H. Alexander's "James Wilson, Patriot, and the Wilson Doctrine," *North American Review,* November 16, 1906, pp. 971–989; in Burton Alva Konkle's "The James Wilson Memorial," *American Law Register,* January 1907, pp. 1–46; and in Konkle's *Life and Times of James Wilson,* Mss., especially pp. 3 and 502.

[3] It must be recognized, of course, that many important activities of Wilson's career did not involve significant speechmaking. Chief among these were his work as head of the Committee of Correspondence at Carlisle, Pennsylvania, in 1774; his essay, "Considerations on the Nature and Extent of the Legislative Authority of the British Parliament," which advocated colonial independence of Parliament and was published just as the First Continental Congress was assembling; his extensive labors in committees of the Second Continental Congress; his position as Advocate-general for France beginning in 1779; and his decisions as a member of the Supreme Court of the United States.

[4] Some accounts of Wilson's life give 1763. The year 1765, however, seems more reliable. It is given by Konkle, *op. cit.,* pp. 8–9; Andrew Bennett, *James Wilson of St. Andrews,* St. Andrews, J. and G. Innes, p. 6; and Robert Waln in Sanderson's *Biography of the Signers of the Declaration of Independence,* Philadelphia, Dolliver, 1876.

or near St. Andrews;[5] and it seems but natural that he should have begun his collegiate training at St. Andrews University, "a grand place . . . the essence of all the antiquity of Scotland, in good and clean condition.[6] His matriculation was in 1755 at the age of thirteen years.[7] By that time the prevailing trend of thought had changed from theological to secular, the professorial system was in use, and English had replaced Latin as the language in which instruction was given. The course was largely classical.[8] Although the evidence is not conclusive, students of Wilson's life think that he went from St. Andrews to the larger University of Glasgow at about the time that Adam Smith, professor of moral philosophy, published his *Theory of the Moral Sentiments* (1759).[9] John Millar has described the course in moral philosophy as including study of natural theology, ethics, jurisprudence, and political institutions founded on expediency.[10] Here were embodied some of the new economic viewpoints later published in the *Wealth of Nations* (1776). Students were required to study Latin, Greek, logic, mathematics, and natural philosophy. From Glasgow, Wilson went to the University of Edinburgh, which was then emphasizing law and history. There he came under the influence of John Stevenson, professor of logic, Adam Ferguson, professor of moral philosophy, and Hugh Blair, professor of rhetoric.

In all this are hints of James Wilson's backgrounds in economics and political science. The industrial revolution was well on its way, and the growing mercantile interests in England were challenging Tory paternalism in government. Ideals of individualism, personal

[5] Randolph G. Adams has photographed the stone cottage at "Carskerdo" near St. Andrews, which is Wilson's traditional birthplace. See Adams' "James Wilson and St. Andrews," in *General Magazine and Historical Chronicle,* University of Pennsylvania, October 1931.

[6] Quoted from Carlyle by Eric S. Robertson in *Old St. Andrews,* Dutton, 1923, p. 200.

[7] Randolph G. Adams, *op. cit.,* p. 18, says that the signature, "James Wilson," in handwriting like that on the Declaration of Independence and the Constitution of the United States, appears on the College roll for February, 1755; and that the same handwriting appears again in the signature, "Jacobus Wilson," in 1758. Konkle, *op. cit.,* pp. 4–5, says that in November, 1757, James Wilson was awarded a scholarship at St. Andrews.

[8] See John Kerr, *Scottish Education,* Cambridge University Press, 1910, p. 214, 219, 224, 241.

[9] See Konkle, *op. cit.,* pp. 5–6.

[10] See article on Adam Smith in *Dictionary of National Biography,* Macmillan, 1898, LIII. John Millar was professor of law at Glasgow from 1761.

freedom, and natural rights were in the air; and the narrower economic nationalism of an earlier day was being superseded by ideas of business initiative and of enterprise untrammelled by governmental restrictions. In France Montesquieu had developed his concept of the federal republic, and in Scotland Adam Smith was building his theory of capitalistic economy on the foundations laid by Harrington's land economy, Locke's money economy, and Hume's liberal views of commercial policy. It seems inconceivable that James Wilson should not have caught from Smith and Ferguson and from the intellectual atmosphere of the three great universities of Scotland his initial impetus toward the ideas of sovereignty as residing in the individual, of government by consent, of capitalistic economy, and of republicanism, all of which stood out so prominently in his later speeches.

Perhaps the breadth and thoroughness of Wilson's Scottish training is indicated by his educational activities in America. After a brief stay in New York, he presented himself in 1766 to Dr. Richard Peters of Philadelphia, rector of Christ Church and trustee of the College of Philadelphia. There the young Scotchman took an examination in the classics, was acknowledged the best scholar who had applied to that date, and appointed a teacher of Latin in the College,[11] where as Graydon records, he was rated a man of "sense and respectability."[12] In May, 1766, James Wilson was awarded the honorary degree of Master of Arts.[13] In later years, from 1773 to 1779, he resumed his connection with the College as professor of English literature, lecturing in the intervals of his legal and political activities; and in 1790 became professor of law.[14]

The breadth of James Wilson's scholarship in history and politics is shown by the wealth of reference in his speeches. Throughout his

[11] See Konkle, *op. cit.*, p. 16. These facts are taken from Konkle's study of the records of the College.

[12] Graydon, Alexander, *Memoirs of His Own Times,* Philadelphia, Lindsay & Blakiston, 1846, p. 39.

[13] Konkle, *op. cit.*, p. 18, refers to the Minute Book of the College of Philadelphia for May 19, 1776. Andrew Bennett says Wilson had already attained his M.A. before coming to America. See Bennett's *James Wilson of St. Andrews, op. cit.*

[14] Wilson was elected a trustee of the College in 1779, and defended its charter before the State government, which was then dominated by a hostile political party. He failed and the charter was revoked, although restored in 1789. See Konkle, *op. cit.*, p. 139.

life he was an extensive reader, and he referred as readily to the views of Pythagoras or the history of ancient Greece as to the Declaration of Independence or the experience of the Swiss Federation. His speeches showed familiarity with the writings of Aristotle, Bacon, Coke, Hobbes, Descartes, Locke, Newton, Vattel, Priestly, Blackstone, and a host of others. In 1780 the Marquis de Chastellux, a member of the French Academy, traveled in North America and wrote of James Wilson as "a celebrated lawyer" who "has in his library all our best authors on public law and jurisprudence . . . and makes them his daily study." [15] The records of Wilson's work justify the opinion of his colleague in the Constitutional Convention, William Pierce, who wrote:

> "Mr. Wilson ranks among the foremost in legal and political knowledge . . . Government seems to have been his peculiar study, all the political institutions of the world he knows in detail, and can trace the causes and effects of every resolution from the earliest stages of the Grecian commonwealth down to the present time." [16]

Of Wilson's speech training our definite knowledge is limited. He probably studied under Blair at Edinburgh, and participated in the activities of literary societies in Glasgow and Philadelphia.[17] We know that as a young man Wilson read the *De Oratore,* for he noted in his Commonplace Book the Ciceronian idea that an orator should be a philosopher who had mastered all the principles of eloquence.[18]

[15] *Travels in North America,* translated from French, London, 1787, I, p. 224. Quoted by Konkle, *op. cit.,* p. 162.

[16] From "Characters in the Convention of the States held at Philadelphia, May 1787," *American Historical Review,* III, January, 1898, p. 329.

[17] Professor Thomas Reid writing in 1764 mentioned a literary society which met once a week at the University of Glasgow. See Kerr, *op. cit.,* 232–236. Konkle, *op. cit.,* p. 21, says that Wilson probably was a member of a literary society in Philadelphia when he was reading law in 1766–1767.

[18] The Docket and Commonplace Book of James Wilson consists of jottings made while he was a law student in the office of John Dickinson, and is now among the Wilson papers at the Historical Society of Pennsylvania. The notes on *De Oratore* are at p. 29 and read as follows:

"Orator: The man who deserves that awful name must be one who upon all occasions shall be able to deliver what he has to say accurately, perspicuously, gracefully, and readily, accompanied with a certain dignity of action. Cicero. *De Oratore,* 30.

"That part of philosophy which regards the life and morals of mankind must be completely understood by an orator. 32.

"No man unless he be a philosopher can be an orator. 37.

"A good speaker is a man who can with a tolerable accuracy and clearness

II

James Wilson's active career as a public speaker began with his rising success as a practicing attorney. He was admitted to the bar in 1767 and soon afterward moved to Carlisle, Pennsylvania. The docket at that place shows that between 1770 and 1774 he appeared in 346 of 819 cases tried there, in addition to his practice in surrounding counties. By 1773 he was acknowledged the leading lawyer outside Philadelphia, and thereafter his practice grew steadily in the intervals between political activities and terms in Congress.[19]

The highest point of Wilson's court room speaking was probably reached in the dispute between Pennsylvania and Connecticut over lands in the Wyoming Valley. The case was argued at Trenton, New Jersey, in November and December, 1782, before a special Commission appointed by Congress. Wilson, as one of the agents for Pennsylvania, based that State's claim on priority of settlement, Indian grants, and charter rights.[20] His colleague, Joseph Reed, president of the Executive Council of Pennsylvania, commented that the argument was "both laborious and judicious." [21] The Commission awarded the lands in question to Pennsylvania. [22]

The most significant of Wilson's speeches in this period, however, were in the arena of political controversy and were motivated chiefly by the issues of the Revolution. Two years before he came to America, the British Parliament under the ministry of Grenville

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according to the general sense of the world talk to the middling run of mankind, but an orator is one who can magnify, who can embellish in a more marvellous in a more magnificent manner whatever he has a mind, one whose knowledge and memory contains all the principles, however extensive, that regard eloquence. 41.

"Nature and genius contribute most to the powers of eloquence. P. 49. Modesty. 52.

[19] See Konkle, *op. cit.*, 43–45.

[20] Wilson's brief of his argument is in "Documents Relating to the Wyoming or Connecticut Controversy," Mss. 1751–1814, 93–112, in the Library of the American Philosophical Society in Philadelphia. Cyrus Griffin, one of the judges, made notes of the speech, which are in *Papers of Thomas Jefferson*, X, folio 1610 ff., Library of Congress.

[21] See Reed, William B., *Life and Correspondence of Joseph Reed*, Philadelphia, Lindsay and Blakiston, 1847, II, p. 390. Joseph Reed was a former fellow student but a political opponent of James Wilson.

[22] *Journals of the Continental Congress*, Washington, Government Printing Office, 1904–1936, XXIV, p. 31–32.

passed the first of the series of measures that rushed the conflict to a crisis. Wilson, therefore, witnessed the struggle almost from its beginnings, and became an active participant in the cause of the colonies. In July, 1774, he was a delegate to a convention held at Philadelphia to protest Great Britain's policies and prepare for the Continental Congress. Again in 1775 he was a member of a second convention for the province of Pennsylvania to elect delegates to the Second Continental Congress. In this provincial meeting he made his most noteworthy speech of these early years.[23]

In 1774 James Wilson had challenged the authority of the British Parliament over the colonies.[24] Now he challenged the prerogative of the Crown, by introducing into the Pennsylvania meeting a resolution condemning British acts in Massachusetts and declaring that the King could not legally alter the charter of that colony unless by consent of its legislature. It will be remembered that at this time Massachusetts was in the midst of her struggle against the "Intolerable Acts." General Gage held Boston with royal troops, but the rest of the colony was governed by a provincial congress. Many colonists were still seeking means of redress under the British government, but the desire for independence was gaining ground rapidly.

Wilson's argument in support of his resolution was a powerful and sincere appeal to patriotic sentiment.[25] Even a casual glance at the text of the speech shows an emotional depth not found in his later addresses. Logic was there, but it was impassioned rather than cool and incisive. The speaker affirmed the right of British subjects to resist force employed contrary to law. He declared that the spirit of opposition in the colonies had been slow to action, loyal to the

[23] The text of this speech is in *Works of James Wilson*, edited by James DeWitt Andrews, Chicago, Callaghan, 1896, II, pp. 547–565.

[24] See Wilson's "Considerations on the Nature and Extent of the Legislative Authority of the British Parliament," *ibid.*, II, pp. 505–543. This paper was prepared during the non-importation controversy of 1769–1770; and argued that the colonies were under control of the Crown, not Parliament, that sovereignty rested in consent of the governed, and that taxation should be controlled by the colonial legislatures.

[25] James DeWitt Andrews said: "The whole speech compares favorably with any of the masterpieces of English or American oratory in elegance of diction, in warmth of expression, power of reasoning, or breadth of information. . . . The brightest side of Wilson's nature is said to have been his power of advocacy, and this speech ought to be an everlasting monument of his eloquence and power." *Ibid.*, II, p. 547. This comment seems to have too much of the spirit of uncritical praise.

mother country, and entirely within the constitution; that the colonists wished to see the power of the Crown established on the solid basis of the constitution, but that since the King had taken part in ministerial tyranny, the distinction between King and ministers made by the constitution for the protection of the Crown had been lost.[26]

If in any of his speeches Wilson showed the results of Hugh Blair's teaching at Edinburgh, it was here, for this address reveals the emphasis on stylistic values which characterized Blair's *Lectures on Rhetoric and Belles Lettres.* The speech is richer in figurative language than Wilson's later speeches. For example:

> Opposition to England is "the lovely offspring of freedom."
> ". . . the root of bitterness still remained."
> ". . . a chain of freedom has been formed."
> "Are these measures, sir, the brats of disloyalty?"

The commission to use military force in America,

> "like an enchanted castle, . . . may terrify those, whose eyes are affected by the magic influence of the sorcerer's despotism and slavery: but so soon as the charm is dissolved and the genuine rays of liberty and the constitution dart in upon us, the formidable appearance vanishes. . . ."

And again,

> ". . . public vengeance collected in dark clouds . . . hurled like a thunderbolt."

One is impressed by the force and the sharp driving cadences of many of the sentences. The progress of the thought is brilliantly rhythmic, as befits impassioned prose. There is much periodicity of structure. Rhetorical questions, a frequent device in all Wilson's speeches, are here used profusely. The exordium makes abrupt use of them:

> "Whence, sir, proceeds all the invidious and ill-grounded clamor against the colonists of America: Why are they stigmatized, in Britain, as licentious and ungovernable?"

Sometimes these questions are short and piercing; sometimes longer and sustained, building up clause by clause to a climax. In Wilson's later speeches plain, straightforward talk predominates, but this address just misses being too ornate.

In spite of the power of Wilson's argument, his resolution did not pass. The reason may be found in his apparent failure to recog-

[26] *Ibid.* James DeWitt Andrews pointed out that this argument bears close resemblance to the spirit and ideas of the Declaration of Independence.

nize the mixed character of popular opinion in Pennsylvania. Two powerful factions were opposed to extreme measures—those in the proprietary interest who revered the charter of William Penn, and the Quakers who hated war. Ordinarily these groups held little in common, but they joined forces to oppose the trend toward independence. The German element of the population, moreover, was largely under Quaker influence. Charles Thomson, secretary of the First Congress, pointed out that a cautious handling of these groups might have led them gradually to the side of independence; but hasty and strenuous measures, for a time at least, enhanced their opposition.[27] Undoubtedly the uncompromising attack which the young and ardent patriot made on British policy was too extreme for a majority of the convention, and his resolution was rejected. They did, however, approve acts of the Continental Congress, vote resistance by force in case all peaceful measures failed, and begin preparations to make Pennsylvania commercially independent. In May, four months later, the Pennsylvania Assembly elected James Wilson a representative in the Second Continental Congress.

Notes of debate left by John Adams, Jefferson, and Madison indicate that Wilson's main sources of effectiveness in the national body were solid fact and careful reasoning. The emotional verve of the patriot of January, 1775, was displaced by a plainer logic and a more cautious appraisal of the temper of his audience. The records not only reveal the influence which the Pennsylvanian exerted in public affairs, but they also foreshadow some of the political philosophy which he carried into the Constitutional Convention of 1787.

He believed profoundly that sovereignty rested with the people. Accordingly we find him in May, 1776, urging that members of Congress should not vote on a resolution beyond their specific powers, even though its purpose was to authorize independent colonial governments.[28] Again in June of that year he favored postponement of the Declaration of Independence because the people had not yet spoken clearly through their various assemblies.[29] He stood for apportionment of taxes among states on the basis of wealth, and of representatives on the basis of population. Congress, he said, legislated for

[27] See letter to W. H. Drayton in The Thomson Papers, *Collections of the New York Historical Society*, 1878, pp. 280–281.

[28] See John Adams' Notes of Debate. *Journals of the Continental Congress, op. cit.*, VI, pp. 1075–1076, and IV, pp. 342, 357.

[29] Jefferson's Notes of Debate. *Ibid.*, VI, pp. 1087–1088.

individuals, not states; and the vital question, therefore, was not whether the smaller states would be ruled by the larger, but whether a majority of the people would be governed by a minority. He thought the interest of any one state to be the interest of every other state.[30]

It is clear that James Wilson was thinking in terms of a national government rather than a confederation. His tenure in Congress was interrupted from 1777 to 1782;[31] but in January, 1783, he introduced a resolution for "the establishment of general funds to be collected by Congress," and made a strong plea for this enlargement of national power.

As every student of American history knows, the Confederation was then in danger because Congress had no power to raise funds and the states were jealous of this power. Wilson evidently recognized the temper of his audience. He approached his subject carefully, with full acknowledgment of the activity and patience with which the states had borne the calamities of war. He recognized also the well-founded popular repugnance to taxes under British rule; but he urged that in a free government the people, being sovereign as well as subject, received with one hand what they paid with the other. Inability to pay could not be the source of difficulty, he argued, for the states were paying far less per capita than before the revolution; and he urged the necessity of general funds collected by Congress to provide for the public debt and meet future needs. Such a measure, he said, would cement the Confederation more firmly.[32] Two days later Wilson was on his feet again detailing the amounts of revenue required and suggesting that taxes on salt and land together with imposts on trade and excise taxes would provide the needed money.[33] His resolution passed Congress; but the states were fearful of centralized power, and the precarious course of events moved on through the Annapolis meeting to the Constitutional Convention of 1787.

[30] *Ibid.*, pp. 1105–1106.

[31] This interruption was due to the return of the Whig party, led by Judge George Bryan, to power in Pennsylvania. Wilson was reelected to Congress when the Federalists regained control of the State government in 1782. In the interim he had helped found the Bank of North America to provide financial support for the Confederation.

[32] Madison's Notes of Debate. *Ibid.*, XXV, pp. 866–868.

[33] *Ibid.*, pp. 880–881.

III

In the Constitutional Convention Wilson was a powerful voice. The records [34] show that he spoke often and effectively, depending, as he had done in Congress, primarily on logical proof supported by profound knowledge of political institutions and affairs.

He continued to champion the idea of a strong national government, because he believed it the only relief from the impotence of the Confederation. He did not go as far as Hamilton's suggestion that states be abolished, but he would have given Congress power to negate state laws. Like other Federalists, Wilson questioned the people's ability to exercise immediate direction of governmental affairs; he would have removed President and senators from too much popular influence by providing longer terms for them than most of the Convention favored. Yet because of his belief that the authority of government should be based on consent of the governed, he advocated proportional representation and popular election of President and senators as well as representatives. He favored a bicameral legislature and a single executive, because he believed that legislative power could be controlled by the people only when divided, executive power only when united.[35]

If we judge by breadth of subject matter and completeness of record, the most significant of Wilson's speeches in the Convention were made on June 16 and June 30. The earlier address was a main bulwark of opposition to the New Jersey Plan. The speaker made detailed comparison of the New Jersey and Virginia proposals, supporting his remarks by references to the political experience of Great Britain, the Dutch provinces, Sparta, Rome.[36] The speech of June 30 upheld the principle of proportional representation. Wilson reasoned that equal representation of states in the Senate would enable less than one-third of the people of the nation to control the sentiments and interests of the majority. Madison's record indicates that the

[34] Chiefly Madison's Notes. For summary of available contemporary records see Max Farrand's *Records of the Federal Convention of 1787*, New Haven, Yale University Press, 1911, 3 vols.

[35] *Ibid.*, I, p. 254. Wilson used a similar idea in the debates in Pennsylvania's ratifying convention. See McMaster and Stone, *Pennsylvania and the Federal Constitution, 1787–1788*, Historical Society of Pennsylvania, 1888, p. 342.

[36] Wilson's outline of this speech in his own handwriting is among his papers in the Historical Society of Pennsylvania, and is printed in Farrand, *op. cit.*, I, pp. 276–280.

arguments were driven home by a series of rhetorical questions, reminiscent in power and frequency, though not in embellishment, of the Pennsylvania convention speech of 1775. "Can we forget for whom we are founding a government," Wilson asked. "Is it for men or for the imaginary beings called states?" [37]

When in July of 1787 the Convention completed its discussion of general principles, James Wilson was an important member of the Committee of Detail appointed to formulate the results.[38] Such a background, both in debate and in committee work, was the basis for his leading part in securing adoption of the new instrument of government.

As soon as the Constitution was submitted to the states a violent and bitter contest began. The issue was drawn between aristocrats and small men, between nationalists and confederationists, between Federalists and Republicans. Opponents of the new instrument asserted that it had been designed primarily to protect property interests rather than personal liberties. Because of his wealth, learning, and strong nationalistic inclinations, Wilson was classed among the enemies of popular government and received an ample share of the vituperation which attended the debate.[39]

The contest in Pennsylvania was sharpened by local political controversies. In 1776 the Whig Society led by Judge George Bryan had written a state constitution preserving the English form of unicameral legislature, but removing the authority of both crown and proprietary interest and making popular will the sole basis of government. This party opposed the Constitution because they feared its adoption would impair their system,[40] and some members even went so far as to oppose participation of educated men in government lest popular will should be restrained.[41] The Whig Society and

[37] *Ibid.*, I, p. 483.

[38] *Ibid.*, I, xxii; II, pp. 85, 129–175.

[39] Popular feeling against Wilson for his alleged aristocratic leanings was so intense, even before the Constitution was framed, that his home in Philadelphia was attacked by a mob in 1779 in what is known as the Fort Wilson riot. The incident is described by Konkle in his *Life and Times of James Wilson*, Mss., 141–148.

[40] This proved to be the case, for after the Constitution was adopted, the Federalists of Pennsylvania, led by James Wilson, rewrote the State constitution to bring it into closer harmony with the principles of the federal government.

[41] See Konkle, *ibid.*, p. 106.

the Federalists, therefore were protagonists of long standing in Pennsylvania politics, and their animosities only served to intensify debate on the Constitution.

In this debate Wilson was the Federalist leader. His best speaking effort before the people was at a great concourse which assembled at the State House in Philadelphia on the evening of October 6, 1787, to select a ticket of representatives for the General Assembly.[42] The Constitution had been before the people less than three weeks and the election of delegates to the ratifying convention was just a month away.

Wilson, therefore, devoted himself to answering the more important objections which had been raised against the new form of government. The plan and method of his speech were simple and clear. He began with ethical proof by remarking that many gentlemen had asked him to explain the new Constitution, and laid a basis for his argument by pointing out that in state constitutions "everything which is not reserved is given;" whereas in the federal Constitution "everything which is not given is reserved."[43] Then in topical order he answered six objections to the new instrument—(1) that it omitted a bill of rights, (2) abolished trial by jury in civil cases, (3) provided a standing army in time of peace, (4) gave the Senate too much power, (5) reduced the states to mere corporations, and (6) delegated power of direct taxation to the federal government. In each case the chief method of refutation was exposition of the provisions of the Constitution itself, but the speaker also used reductio ad absurdum, definition, analogy, and appeal to local interest. In conclusion Wilson charged the opposition with selfish interests, and said, "I am not a blind admirer of this plan," but "the seeds of reformation are sown in the work itself" and "I am bold to assert that it is the best form of government which has ever been offered to the world."

Applause was frequent and loud. Federalists thought well of the address. When General Washington at Mount Vernon saw a copy of it, he urged immediate republication as an effective answer to oppo-

[42] The text of this speech and description of the occasion were published in the *Pennsylvania Packet*, Oct. 10, 1787, and reprinted in McMaster and Stone, *op. cit.*, p. 142 ff.

[43] In a letter to Samuel Adams, Richard Henry Lee referred to this as a distinction without a difference. See *Letters of Richard Henry Lee*, edited by James Curtis Ballagh, New York, Macmillan, 1914, II, p. 457.

nents of the Constitution.[44] Those opponents, however, had other opinions. "A Democratic Federalist," writing in the *Pennsylvania Packet,* spoke of the argument as ingenious but futile.[45] An anonymous "Officer in the Late Continental Army" branded the speech as a "train of pitiful sophistry and evasions," and questioned Wilson's patriotism.[46] Centinel referred to the argument as "most flimsy sophistry," and called Wilson and his coadjutors "false, detestable patriots."[47] Nevertheless, whether because of Wilson's speech or other influences, the Federalists won. They elected forty-six of the sixty-nine members of the Pennsylvania ratifying convention.[48]

These sixty-nine "made up a body as characteristic of the State as has ever been gathered."[49] Most of them were natives of the State. At least twenty-one were lawyers, sixteen were land owners and farmers, fifteen were merchants and manufacturers, three were ministers, and three physicians. Twenty-eight of them had college or classical education, and only two or three were definitely said to have had meagre education. All but one, a minister, had held public office before election to the Convention. Federalist strength was primarily among representatives of the original counties of the State—Philadelphia, Bucks, and Chester. Most of the Antifederalists were members of Judge George Bryan's party and came from western counties in the old Pittsburg road region.[50]

The Convention probably met first on Wednesday, November 21, 1787.[51] Several days were spent organizing, adopting rules of procedure, and hearing the proposed Constitution read. On Saturday,

[44] Washington's letter to David Stuart, Oct. 17, 1787. Quoted by Konkle, *op. cit.,* p. 335.

[45] Issue of Oct. 23, 1787. See McMaster and Stone, *op. cit.,* pp. 150–157.

[46] *Independent Gazetteer,* Nov. 6, 1787. See McMaster and Stone, *op. cit.,* pp. 179–187, especially p. 183.

[47] *The Freeman's Journal,* Oct. 24, 1787. See McMaster and Stone, *op. cit.,* pp. 579–591. The writer who used the name "Centinel" and James Wilson were the protagonists in written argument on the Constitution in Pennsylvania. Centinel may have been Samuel Bryan, son of Judge George Bryan. See McMaster and Stone, *ibid.,* pp. 6, 120; and Konkle, Burton Alva, *George Bryan and the Constitution of Pennsylvania,* Philadelphia, Campbell, 1922, p. 309.

[48] See McMaster and Stone, *op. cit.,* p. 21, 212–213, 425–426. A check of the list of members shows a total of twenty-three Antifederalists.

[49] *Ibid.,* p. 13 and 712–761.

[50] See Konkle's *Life and Times of James Wilson,* Mss., pp. 339–340.

[51] McMaster and Stone, *op. cit.,* p. 211.

November 24, Chief Justice McKean formally moved its adoption. Wilson arose at once and opened debate.[52]

His audience extended far beyond the Convention hall to include the population of the entire country. Debate over ratification was going on in every state, and Federalists of Pennsylvania knew that failure to carry with them a strong majority of their people would do the Federalist cause irreparable damage in all the other states.

Wilson, therefore, began with an attempt to create a favorable attitude toward both himself and his subject, and to orientate his audience into a national attitude of mind. He remarked that he was the "only member of this respectable body, who had a seat in the late Federal Convention," and surveyed history to show that the new Constitution actually embodied the principle of representation in a government for the first time. The high point of the reasoning was an analogy between civil liberty and federal liberty: Just as individuals surrender natural liberties to gain civil liberty under the state, said Wilson, so states surrender some civil liberty to gain the advantages of a broader federal liberty.[53] States, like individuals, he added, gain more by limitation of others' freedom than they lose by limitation of their own. He quickly dismissed other possible forms of colonial union, and brought patriotic appeal to support the federated republic provided in the Constitution.

The entire argument was national in scope and constructive in purpose. Whereas Wilson's earlier speech in the State House yard

[52] There are three versions of this speech: (1) An abstract or summary made by Alexander James Dallas and printed in the *Pennsylvania Herald* for November 28, 1787. (2) A shorthand report by Thomas Lloyd, which was the basis for the version given in Elliot's *Debates*, and which McMaster and Stone say had been subjected to revision. (3) A pamphlet entitled, "The Substance of a Speech Delivered by James Wilson, Esq. Explanatory of the General Principles of the Proposed Federal Constitution," published by Thomas Bradford in Philadelphia. This version is used by McMaster and Stone in *Pennsylvania and the Federal Constitution, 1787–1788*, pp. 218–231. They say, ". . . we believe the pamphlet version to be the nearer correct. The language used in it and the style are more those of a speech, and as it was in the hands of the people long before Lloyd's volumes, and at a critical time, it is given in preference." McMaster and Stone further point out that Elliot follows Lloyd in giving an incorrect date for the delivery of the speech. For discussion of the whole matter see *Pennsylvania and the Federal Constitution*, pp. v, 14–15, 211–233.

[53] Wilson had used this analogy between civil liberty and federal liberty during debates in the Constitutional Convention. See Farrand, *op. cit.*, I, p. 166.

had aimed chiefly to remove doubts and had dealt simply with tangible facts of government, his Convention address dealt with broad political principles and basic viewpoints, historical precedents and general types of government. Before the local audience he spoke more in terms of the welfare of Pennsylvania; in the Convention he appealed to love of liberty and patriotic pride in the dignity and power of the nation. The State House speech was organized in a simple, topical manner; the Convention address was a highly unified chain of reasoning which began simply enough, but which could be comprehended in its full force only when the vital connections of part with part were followed without break and the whole sensed as a unit.

The organization of the Convention speech, in fact, followed what might be called a this-or-nothing method.[54] Wilson began with an account of the difficulties the framers of the Constitution met, then focused attention on the federated republic as the only available means of securing true liberty, and came to a climax by depicting the desperate political and social conditions of the states. A speaker of less skill might have argued about need at the beginning of the speech; but Wilson left it until last, and so gave his audience the alternative between the Constitution and chaos.

During the three weeks the Convention sat, James Wilson with the aid of Thomas McKean and Benjamin Rush, bore the burden of meeting Antifederalist arguments. Wilson drew upon his wide political knowledge, referring constantly to the writings of historians and political theorists and to the facts about the state governments and the Confederation. All of his discourses showed clarity and coherence of procedure, and readiness in reply. Repartee and sarcasm occurred infrequently.

Basic to all his argument was the principle that the Constitution was not a compact between states, but was founded directly upon the sovereignty of the people. He insisted repeatedly that state and federal governments were interdependent rather than opposed, that separation of powers was a safeguard of liberty, and that the powers granted the federal government were both necessary and adequate.[55]

[54] See Gladys Murphy Graham's "Natural Procedure in Argument," *Quarterly Journal of Speech*, November 1925, pp. 319–337; and also her "Logic and Argumentation" and Herbert A. Wichelns' "Analysis and Synthesis in Argumentation" in the same journal for November 1924, pp. 350–363, and June 1925, pp. 266–272.

[55] Of special interest in view of subsequent history were Wilson's assertion that the Supreme Court should exercise the power of judicial review and his

He answered the objection that the Constitution lacked a bill of rights by pointing out that the language of the Preamble, " . . . we, the people . . . do ordain, constitute, and establish . . . ," gave them full power to do what they pleased and made a bill of rights unnecessary; whereas in England a bill of rights was necessary because the liberties of the people were the gift of the King. He added that a bill of rights would be improper in the federal plan for "it would imply that whatever is not expressed was given, which is not the principle of the proposed constitution." [56] On December 11 Wilson occupied the entire day in a final reply to opponents of the Constitution, and closed with a reminder of the benefits to be gained by adoption: It would, he said, make us a nation, promise internal security and tranquillity, and lay "a foundation for erecting temples of liberty in every part of the earth."

The Antifederalists attempted to secure postponement, but ratification was accomplished December 12. The vote was forty-six to twenty-three, exactly the majority the Federalists held at the opening of the Convention. All the argument in favor of the Constitution secured no new votes, yet James Wilson has been given credit for the result,[57] and McMaster and Stone say that had ratification been less prompt or decided the Constitution might have been rejected or have sunk to the level of the Articles of Confederation.[58]

Contemporary evidences of Wilson's effectiveness are strong. *The Pennsylvania Packet* (Federalist) commented that "the celebrated Roman orator would not have blushed to own" the opening arugment,[59] and Jasper Yeates spoke of it as "one of the most sensible, learned and elegant speeches" he had ever heard.[60] A Convention

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vision of westward expansion. See McMaster and Stone, *op. cit.*, pp. 304, 323, 354.

[56] McMaster and Stone, *op. cit.*, pp. 249, 254.

[57] George T. Curtis in *Constitutional History of the United States,* New York, *Harpers,* 1889, I, p. 309, said, "His [Wilson's] speech in that body [The Pennsylvania Ratifying Convention] is one of the most comprehensive and luminous commentaries on the Constitution that has come down to us from that period. It drew from Washington a high encomium, and it gained the vote of Pennsylvania for the new government, against the ingenious and captivating objections of its opponents." John Fiske in *Critical Period of American History,* Boston, Houghton Mifflin, 1896, p. 314, said, ". . . the logic and eloquence of James Wilson bore down all opposition."

[58] *Op. cit.,* p. v.

[59] McMaster and Stone, *op. cit.*, p. 233.

[60] Quoted by Burton Alva Konkle in *Life and Times of Thomas Smith,* pp. 193–194, from letters in possession of Dr. Alfred Whelen of Philadelphia.

observer writing in the *Packet* referred to "the nervous thinking and correct eloquence of Wilson" and to its effect in strengthening those who favored the Constitution and converting those in doubt.[61] Francis Hopkinson wrote to Jefferson that Mr. Wilson seemed to unite the powers of Demosthenes and Cicero,[62] and Robert R. Livingstone wrote that Wilson's oratory in the Pennsylvania Convention "combined information, logic, and eloquence with resistless effect."[63] The testimony of Antifederalists was no less conclusive. A writer in the *Independent Gazetteer* declared that but for "J. W———n, Esquire, without whose direction nothing was done or said . . . the business would have been lost."[64] Centinel paid unintentional tribute in these words:

". . . the chief reliance is on James the Caledonian, who can to appearance destroy all distinction between liberty and despotism, and make the latter pass for the former, who can bewilder truth in all the mazes of sophistry, and render the plainest propositions problematical." [65]

Shortly after the Convention Wilson and McKean were burned in effigy by Antifederalists at Carlisle, Pennsylvania,[66] but on July 4, 1788, Philadelphia celebrated the adoption of the Constitution with James Wilson as orator of the day. His speech was mildly ornate. The ardent patriot of 1774 had become the calm and expansive patriot, glorifying the blessings of free government and exhorting his fellow citizens to guard well what they had won. "Happy country," he concluded. "May thy happiness be perpetual."[67]

IV

When the Constitution was ratified and the new government established, James Wilson was appointed to the Supreme Court of the United States. At about the same time the College of Philadelphia

[61] McMaster and Stone, *op. cit.*, p. 450.

[62] From letter of December 14, 1787, in Library of Congress, *Jefferson Papers*, xxv, 6020. Quoted by George E. Hastings, *Life and Works of Francis Hopkinson*, University of Chicago Press, 1926, p. 396, fn.

[63] Quoted by Lucien H. Alexander in "James Wilson, Nation Builder," *The Green Bag*, XIX, pp. 5, 269.

[64] McMaster and Stone, *op. cit.*, p. 505.

[65] Letters of Centinel, No. XIII. Quoted in McMaster and Stone, *op. cit.*, p. 643.

[66] Descriptions of events in Carlisle are reprinted in McMaster and Stone, *op. cit.*, p. 486 ff.

[67] This address was first printed in *The Pennsylvania Packet*, July 10, 1788, and reprinted in *Miscellaneous Essays and Occasional Writings of Francis Hopkinson*, Philadelphia, T. Dobson, 1792, II, pp. 402–418.

founded a professorship of law and chose Justice Wilson to fill the post.[68]

The lectures[69] thus initiated were designed to be a general cultural presentation of political doctrines as well as a professional course for lawyers. The purpose was expository. In earlier perods Wilson, like the authors of the Federalist papers, had sought primarily to influence action; but in the College he was speaking as the first non-controversial expositor of the American political creed.[70] It is true that the lectures were full of opposition to the principles of the English system as analyzed by Blackstone, Locke, and others; but whereas Wilson formerly had sometimes used explanation to serve the ends of persuasion, now he often used argument as an aid to instruction. Nevertheless he was not primarily an academician summarizing a system which had developed over a long period of time, as was Blackstone in his Vinerian lectures at Oxford. James Wilson was expounding principles and institutions of government he himself had helped to create and in whose operation he was then taking an important part.[71]

The opening of the course on December 15, 1790, was a notable occasion. Congress was in session, and President and Mrs. Washington, together with a distinguished company of ladies and gentlemen, attended to hear Justice Wilson, who had long been a leader in the cultural as well as political life of the nation's capitol.[72] Before such an audience the speaker urged that in a free government every citi-

[68] William Draper Lewis, Dean of the University of Pennsylvania Law School, said that Wilson was the second person in the United States to occupy such a position, Chancellor George Wythe of the College of William and Mary being the first. See *American Law Register, January* 1907, p. 20.

[69] These lectures have been published twice under the title *The Works of James Wilson.* The first edition was made by Bird Wilson, son of James Wilson, and issued by Bronson and Chauncey, Philadelphia, 1804, 3 vols. The second edition was by James DeWitt Andrews, and issued by Callaghan, Chicago, 1896, 2 vols. In this essay all page references to Wilson's *Works* refer to the second edition.

[70] Edward Elliott, *Biographical Story of the Constitution,* New York, Putnam, 1910, p. 66, has pointed out the difference between the persuasive purpose of the *Federalist* and the expository purpose of Wilson's *Lectures on Law.*

[71] Burton Alva Konkle and Margaret C. Klingelsmith have pointed out that the principles set forth in Wilson's lectures were the basis for many of his charges to juries and for many important decisions of the Supreme Court. See Konkle's *Life and Times of James Wilson,* Mss., Ch. 24, and Klingelsmith's "James Wilson, 1742–1798," in *Great American Lawyers,* Philadelphia, Winston, 1907, I, pp. 151–221.

[72] *Works of James Wilson,* Memoir, I, p. xvi.

zen should study law as an historical science, and declared his thesis that in the United States law should be based not on the European doctrine that sovereignty resides in a superior power but on the American doctrine that sovereignty belongs to the people.

The presentation was characterized by freedom of organization and many digressions: Wilson complimented his audience, covertly praised President Washington, defended the propriety of a Supreme Court justice setting forth his legal principles in the lecture room, and closed with some glowing remarks on beauty and an address to the ladies in his audience. Such extensive use of ethical proof can scarcely be found amid the lines of Wilson's earlier speeches.[73]

When the opening celebration was over and the ladies probably no longer in attendance, Wilson gave less attention to amenities. His logic was more severe and the development of thought usually fuller. Colorful analogies and compliments to the audience seldom occurred. The personal pronouns "I" and "We" were used frequently, but of personalities there were few. In short, the speaker was more concerned with breadth of matter than elegance, and with clearness than pleasantness or even strict unity.[74] The spirit of the first lecture was in part occasional, but the dominant spirit of the lectures as a whole was informative.

Throughout the winter of 1790–1791 and part of the following winter Wilson continued his work. The original outline of the course showed that he intended to discuss the nature of law and obligation; the kinds of law classified as to source—natural law, the law of nations, municipal law; the individual as the subject of law; the nature of government and of constitutions; common law and evidence; the constitutions of the United States and Pennsylvania and the departments of government under them; and finally, criminal law and the law of property.[75] During the first year he completed his outline through common law and evidence, and intended to discuss the remaining topics during the next winter.

It is quite certain, however, that not all these lectures were delivered, even though they are included in the published volumes. In

[73] Wilson's closing passages, however, call to mind the remarks on women in his first literary effort, "The Visitant," a series of articles written in alternation with William White and published in *The Pennsylvania Chronicle* beginning February 1, 1768.

[74] Wilson evidently wrote his material in the approximate form in which it was spoken, but his son, Bird Wilson, says the copy was never corrected by its author nor even divided into distinct lectures, and that the delivery was characterized by frequent digressions and recapitulations. See Preface to Original Edition, *Works of James Wilson,* I, p. xxv.

[75] *Ibid.,* I, pp. 36–48.

April, 1792, an act of the Assembly united the College of Philadelphia with the University of Pennsylvania; and though Wilson was appointed to the law professorship in the new institution thus formed, he never resumed his lectures. The reasons for this are largely unknown.[76] Bird Wilson records that his father intended to complete the series for publication, but never did so because he became engrossed in the task of making a revision and digest of the laws of Pennsylvania.[77]

V

What estimate should be made of James Wilson as a speaker?

The speeches we have considered indicate a striking progression in his skill. In the Convention for the Province of Pennsylvania in 1775 he showed himself a master of stylistic effect and fervid emotional appeal, but deficient in audience analysis. In Congress, however, he revealed a keener sensitiveness to audience attitudes, and depended for his effectiveness primarily on fullness of information and sound logic. In the Pennsylvania Ratifying Convention he demonstrated ability to combine logic and emotion, to make effective appeals to fundamental motives of action, and to meet immediate stress of controversy by effective refutation. Finally, the law lectures of 1791 show the full maturity of Wilson's political science and his power in exposition; and the first lecture, as well as the address of July 4, 1788, indicates that he was flexible enough to speak the language of social grace when occasion required.

Evidently the chief power of Wilson's eloquence lay in his breadth of learning and command of logic. A French representative in America referred to him as profound,[78] and Major William Pierce said no man was more clear, copious, and comprehensive.[79] Wilson knew

[76] William Draper Lewis said the lectures were discontinued "probably because there were no students to attend them." See *American Law Register*, January 1907, p. 20. Margaret Klingelsmith, *op. cit.*, pp. 213–214, said, ". . . it is probable that the time was not ripe for a sustained effort of this kind; the training received in a law office being then held sufficient to prepare for the work of the bar, and also thought to be of a more practical nature. Mr. Wilson had ventured to criticize Blackstone, and it may have been thought that a man whose opinions were so well received in England as Judge Blackstone's must, of necessity, be wiser than any American lecturer."

[77] *Works of James Wilson*, I, pp. xvii–xviii.

[78] Quoted from archives of the French Ministry of Foreign Affairs, 1788, by Max Farrand, *op. cit.*, III, p. 236. The complete characterization was, ". . . jurisconsulte distingué, . . . homme altier, aristocrate, intrépide, actif, éloquent, profond, dissimule. . . ."

[79] From "Character Sketches of Delegates to the Federal Convention," *American Historical Review*, III, No. 2, p. 329, January 1898.

how to arrange and develop ideas clearly, and occasionally appealed to deep emotions and motives of conduct. His mastery of *inventio* and *dispositio* is unquestioned.

The Pennsylvanian's style, except in his earliest years, was plain and direct rather than ornate or elegant. Graydon says that some of Wilson's contemporaries sneered at his "occasional simplicities and brilliant conceits," but adds that he never heard any man make greater speeches.[80] Andrew C. McLaughlin has commented that Wilson must have been a curious, angular being, given to repellant learning and possessed of prolix and voluble wisdom.[81] There may be a little truth in this opinion, but it is modified if not contradicted by the testimony we have cited from many of Wilson's contemporaries, foes as well as friends.

Probably delivery was the weakest aspect of Wilson's oratorical practice. His voice was powerful though not melodious.[82] Contemporaries described him as dignified in appearance, but constrained and imposing rather than persuasive or charming.

". . . the impression left was more like that of submission to a stern than a humane conqueror." [83]

It seems fair to conclude that James Wilson was not a supremely great orator. At least he did not measure up to the standard which he copied in his Commonplace Book from Cicero's *De Oratore*.[84] Though learned, he lacked the ideal orator's complete mastery of the principles of eloquence. He was not always graceful, and his speaking seldom, if ever, rose to the more marvellous heights of embellishment and persuasion. Nevertheless Wilson was more than an ordinary public speaker. He had something to say and he said it with the combined force of scholarship, logic, and conviction. He was accurate and impressive. We should not forget that his oratory was a significant and effective influence in the founding of our national government.

[80] Graydon, Alexander, *op. cit.*, p. 354.

[81] "James Wilson in the Philadelphia Convention," *Political Science Quarterly*, XII, No. 1, p. 20, March 1897.

[82] William Rawle and Robert Waln disagree about Wilson's voice. See quotation from Rawle by Hampton L. Carson, *American Law Register*, January 1907, p. 40, and Waln's sketch in Sanderson's *Biography of the Signers of the Declaration of Independence, op. cit.*

[83] Quoted from William Rawle by Hampton L. Carson, *op. cit.* See also statement by William Pierce, *op. cit.*

[84] See footnote 18, above.

VOWEL QUALITY BEFORE AND AFTER AN OPERATION FOR AN OCCLUDED NASAL PASSAGE

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PHYSICAL descriptions of the vowels in terms of the relative energy in various frequency bands have become more accurate as more refined instruments for recording and analyzing sound waves have been perfected. For example, the vowel *ah,* once supposed to be characterized by one or two distributions of energy, is now known to contain at least three and possibly five such distributions.[1] These distributions, in turn, are believed to be the correlates of resonators, though no one-to-one relationship is assigned to a distribution of energy and a particular resonator. A possible clue to one such relationship arose when an analysis of *S*'s vowel in the word top showed no energy in the characteristic band, 2500-3000~, and when *S* was discovered to have a partially occluded nasal passage. In order to ascertain the effect on the vowel of this condition of the nasal passage, records were made of some vowels spoken by *S* before and after the operation to correct his partially occluded passage.

S stood about 12 in. from a microphone in a dead room[2] and pronounced at constant rate, loudness, pitch, and quality short series of each of the words *teep, toop,* and *top.* An oscillographic record was obtained through a calibrated system of the fourth word in each series. The even-numbered sound waves of each vowel were analyzed harmonically by means of a Henrici analyzer and the amount of relative energy in each partial was computed.

Fig. 1 shows the results of the analysis, the wave number being plotted on the abscissa of each graph, the frequency on the diagonal line, and the relative intensity of each component on the ordinates. The intensities of the partials are plotted in db from a base 25 db below the total intensity of the strongest sound wave in each vowel. The vowels spoken before the operation are on the left side of the Fig. and those spoken after the operation are on the right.

[1] *Cf.* Miller, D.C., *The Science of Musical Sounds,* Macmillan, N.Y., 1926; Lewis, Don, "Vocal Resonance," *Journal of the Acoustical Society of America,* VIII, 1936, 91–99; Laase, Leroy T., "The Effect of Pitch and Intensity on the Quality of Vowels in Speech," *Archives of Speech,* II, 1937, 41–60.

[2] The room has a sound reduction co-efficient of .90.

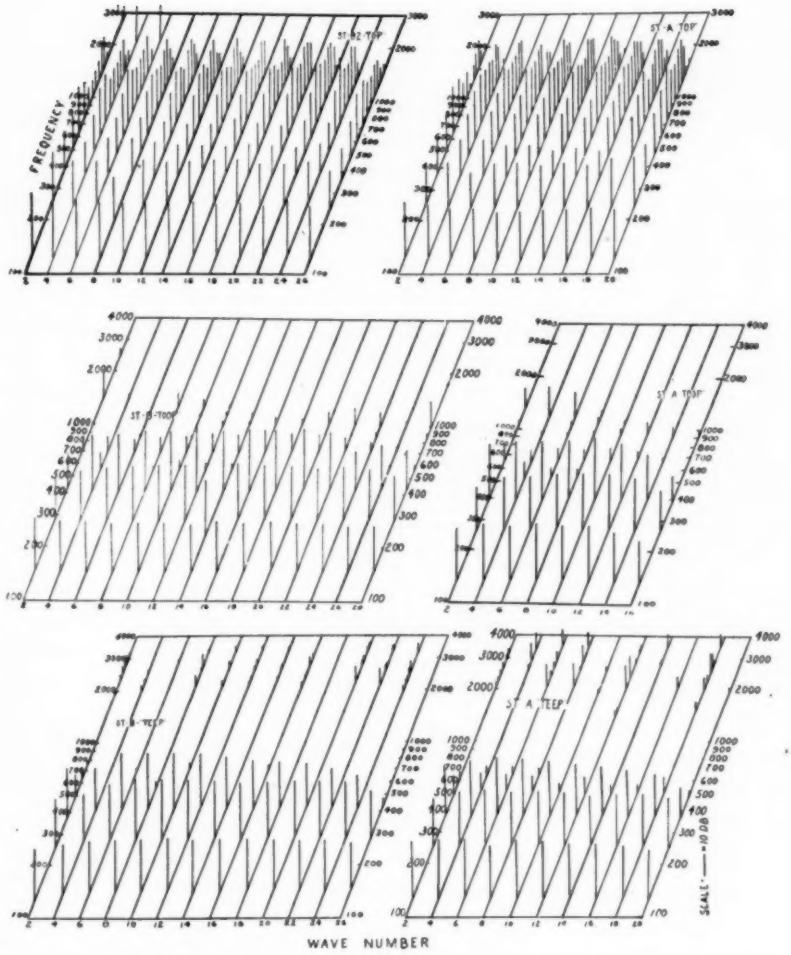

FIG. 1. Acoustic spectra of the even-numbered waves of "top," "teep," and "toop" before and after operation.

Fig. 2 presents in another form the data represented in Fig. 1 as well as the discernible energy below the arbitrary reference point. In this Fig. frequency is plotted along the abscissa and wave number along the ordinate. Along each line representing a wave, ordinates are erected at the frequencies at which centroids of energy distributions appear and the height of each ordinate is in proportion to the amount of energy in the corresponding distribution. Thus the graphs in Fig. 2 show averages of the energy distributions in Fig. 1. Again the vowels spoken before the operation appear on the left side of the Fig. and those spoken after the operation on the right.

The condition which provoked the study was the absence of energy in the 2500-2700~ frequency band in the "B2 Top" and the possibility that the "A Top" might contain such energy as a result of the intervening operation. However, a comparison of the pre-

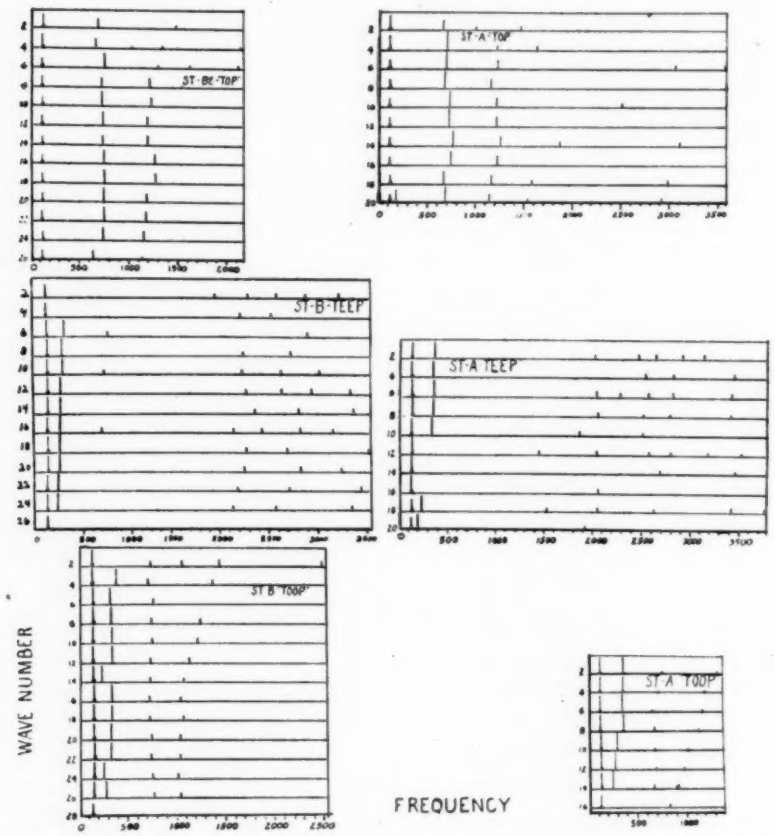

FIG. 2. Centroids of energy distributions in even-numbered waves of "top," "toop," and "teep" before and after operation.

operation and the post-operation records reveals no significant differences between the two sets of vowels. Evidently the partially occluded nasal passage had no effect upon the quality of *S's* vowels. Aside from this negative finding, the study tends to confirm an earlier observation, that for a given person the vowel is a stable phenomenon.[3]

[3] Black, John W., "The Quality of a Spoken Vowel," Archives of Speech, II, 1937, 7–27.

INFRA-GLOTTAL RESONANCE AND A CUSHION-PIPE*

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STUDIES of chest resonance have discredited the idea that the entire thoracic cavity functions as a large resonator. For example, as Giesswein has pointed out,[1] the presence of spongy lung tissue forms a foam-like mass which interferes with sound transmission. However, accompanying phonation there are two distinct vibratory phenomena which possibly may occur below the glottis. In the first place, as Simon and Keller discovered,[2] a mechanical shaking or forced vibration is transmitted along the bony framework of the body. In the second place, it may be that the bronchial tree encases an air column which during phonation acts as a resonator to influence the spectrum of the vocal sound. This last possibility inspired the investigation which is the subject of the present paper.

The study here reported aims to suggest more definitely what, if any, is the influence of the air column below the vocal folds. Specifically, it is a study of the infra-glottal effects produced by a variable-length supply-tube upon the frequency of vibration of a cushion-pipe model larynx. As such it is open to the criticism that a model system may not be analogous to the human mechanism. Recognizing this limitation, there are two reasons why such a study still is valuable. In the first place, with a model system one can isolate parts and study their influences in a way which is impossible in the living vocal mechanism. Thus, one gains information which may suggest possible factors in vocal physiology and which may furnish evidence supplementary to other lines of experimentation and reasoning. In the second place and just as important, if models are to be a valuable corollary to other methods of study in the field of voice science, these models must be studied more thoroughly as physical systems in their own right.

* A condensation of a dissertation submitted as partial fulfillment of the requirements for the degree Doctor of Philosophy at Northwestern University. The study was directed by Professor C. T. Simon.

[1] Giesswein, M., "Die Resonanzbeziehungen zwischen Stimme und Brustorganen," *Possow-Schaefer's Beiträge,* XXII (1925), 82–120.

[2] Simon, C. T., and Keller, F., "An Approach to the Problem of 'Chest Resonance,'" *Quarterly Journal of Speech,* XIII (1927), 432–438.

In other words, the tendency in the recent past has been to start with the assumption that a model of a given type is analogous to the human mechanism and then to reason back from isolated findings regarding the model's function to theories regarding the living speech mechanism. Consequently, the physics of the more recent model larynges has for the most part been ignored. The effects which accrue from controlled variation of physical conditions have not been explored thoroughly. The laws which apply to such models need amplification and more definitive statement. Until further experimentation builds up a mass of evidence which will show how much the two systems have in common, it will remain impossible to judge the validity of any analogy between refined laryngeal models and the human mechanism. The present study marks the beginning of an effort to assemble such evidence. Therefore, its main aim was to determine the characteristics of the model system selected for study. Its findings and conclusions relate to this system. Incidentally, however, the study furnishes suggestions as to possible relationships existing within the human vocal instrument.

The present study, then, has two aims. First, by isolating and controlling the parts of a model system, it aims to determine the influences of the supply-tube on a cushion-pipe model larynx and thus to furnish *suggestions* as to the possible interrelation between the bronchial tree and the vocal folds. Second, it initiates a study of a model system with the idea of eventually determining how closely the physics of this system resembles the physics of the speech mechanism.

I. History

Exclusive of muscle preparations and vibrators which were not designed to resemble the structure of the human mechanism, the model larynges which have been used during the past century may be grouped into three main types.[3] Johannes Müller,[4] in 1839, described both flat- and oblique-membrane models. The *flat-membrane* models were constructed of two india-rubber sheets so fastened to the end of a supply-tube that they lay in a plane at right angles to the axis of the tube. The *oblique-membrane* models were likewise formed of two india-rubber flaps, but in this case the flaps angled

[3] For details see Carhart, R. T., *Infra-Glottal Resonance and a Cushion-Pipe*, Doctoral dissertation, Northwestern University, 1936.

[4] Müller, J., *Über die Compensation der physischen Kräfte am menchlichen Stimmorgan*, (Berlin: Hirschwald, 1839).

upward from the tube to form a gable-shaped structure with the slit at its peak. These models were accepted as fairly close counterparts of the functioning larynx until Ewald (1898) questioned the membranous-reed theory of vocal fold action,[5] substituting for it the cushion-pipe theory. Subsequently, practical cushion-pipe models were designed and used in a number of investigations. The typical *cushion-pipe* model consists of two inflatable, balloon-like structures laid side by side in such manner that they are caused to vibrate by an air stream passing through the slit between them.[6] Of existing model types, the cushion-pipe probably most accurately reproduces the function of the living larynx during production of normal register tones. Therefore, a cushion-pipe similar to Ewald's small,[7] inflatable model was used in the present study.

That a supply-tube may exert an influence upon certain vibrators is well known. The question has arisen whether or not model larynges are subject to supply-tube influences. In attempting to answer this question investigators using membranous-reed models have disagreed. Their studies indicate that model larynges of different types respond differently and that factors such as tension, vibrator size, and vibrator composition may influence (in part at least) the effect which the supply-tube will have upon any given model.

The influence of supply-tube length on cushion-pipe vibration has received scant attention. Wethlo's 1913 experiment is the only one which has dealt significantly with this question.[8, 9] Wethlo studied infra-glottal resonance by altering the length of the supply-tube and

[5] Ewald, J. R., "Die Physiologie des Kehlkopfs," *Handbuch der Laryngologie*, ed. Heymann, P. (Vienna: A. Hölder, 1898), I, 165–226.

[6] Throughout the rest of this paper the term cushion-pipe will be used to refer to models possessing inflatable, balloon-like vibrators. It is not to be confused with the infra-glottal resonator, which is often called the supply-tube.

[7] Ewald, J. R., "Zur Konstruction von Polsterpfeifen," *Pflüger's Archiv*, CLII (1913), 176 ff.

[8] Wethlo, F., "Versuche mit Polsterpfeifen," *Passow-Schaefer's Beiträge*, VI (1913), 268-280.

[9] Wethlo was interested in a number of the factors influencing cushion-pipe response. For example, he found that the relation between the pressure within the cushions and the pressure of the exciting air stream exerted a decided influence on the activity of the cushions. There were pressure conditions under which the cushion-pipe was silenced. Moreover when the model sounded, its pitch could be altered by changing one of the two pressures mentioned. Lip pressure increases raised the pitch, while driving pressure changes, though producing varied results, as a rule caused a drop in pitch.

observing the pitch changes of the cushion-pipe note. He started with a 7cm. supply-tube and applied exciting air-stream pressures of 20mm., 25mm., and 30mm. of mercury, the intra-lip pressure being 30mm. of mercury. The supply-tube was lengthened by 5cm. steps until a total length of 55cm. was reached. With the 20mm. and 30mm. air stream pressures, the pitch of the cushion-pipe note dropped on the average of a semi-tone for each 5cm. increment in tube length. This progression continued until the 35cm. length was reached. Now, with both these air pressures, the pipe was silent. It remained silent until the 50cm. and 55cm. lengths were used. With these last tube lengths the model again sounded. This time the notes obtained were the same as those for the 15cm. tube length. In contrast, with the 25mm. air stream pressure the model larynx sounded at only two tube lengths, namely, the 35cm. and 45cm. lengths. Wethlo's results furnish evidence that the supply-tube length can affect the cushion-pipe frequency. To explain, probably the interrelation of the lip and driving pressure was responsible for the silencing which occurred regularly with air stream pressure of 25mm. But the changes observed when the two other air stream pressures were used cannot be explained in like manner.

Continuing his study Wethlo found that if he added a sizeable supra-glottal reasonator, the results described above ceased to exist. The most common occurrence under the new conditions was the production of a note pitched approximately the same. Similarly, pitch changes dependent upon supra-glottal column variation were obtained only when relatively short supply-tubes were used. In conclusion, although Wethlo's work indicates that an infra-glottal resonance effect sometimes influences a cushion-pipe, more detailed experimentation is needed for a fuller description of this effect. Such is the aim of the present study.

While Wethlo made no effort to explain the infra-glottal influence which he observed, Ewald (1913) offered an explanation based on Wethlo's findings.[10] Those tube lengths with which the cushion-pipe was silenced Ewald termed *pessima*. Those with which it spoke he called *optima*. He claimed that in Wethlo's study successive pessima or successive optima occurred after tube length increments of one-half the wave-length of approximately the middle note within the first optimum. Optima and pessima alternated, the center of each optimum being separated by one-quarter wave-length intervals from

[10] Ewald, *Pflüger's Archiv*, 185–186.

the centers of the two adjoining pessima. Thus, as the supply-tube was elongated, like effects occurred at half wave-length intervals,[11] while opposite effects followed each other at one-fourth wave-length intervals.

Since 1913 investigations of infra-glottal resonance have not been limited to any single model type. Nevertheless, since that time there have been no significant studies of the supply-tube influences exerted upon the vibrational characteristics of a true cushion-pipe. Consequently, because Wethlo reported in detail only one set of results in which complicating factors were not present, there is need of a more complete investigation of the interrelation, if any, between a cushion-pipe and the air column below it.

II. Description of Apparatus

The present study investigated the influence of a variable supply-tube upon the vibrational frequency of a model larynx. The model larynx was activated by an air stream passing through the infra-glottal resonator. This supply-tube was made of telescopic tubing and ended in a framework holding two cushion-pipe lips of the type described by Ewald. A separate air pressure system allowed these lips to be inflated. Manometers and safety valves were included in both the driving air stream system and the lip pressure system. Frequency of cushion-pipe vibration was measured by a stroboscopic disc, which was illuminated by a sound-controlled neon lamp.

The air stream used to activate the model larynx was piped into the laboratory under 40 pounds pressure. Figure 1 illustrates the system through which this air passed before reaching the cushion-pipe. First, this compressed air was released into a large, cylindrical expansion chamber which served to remove excess moisture from the air stream and to keep sudden pressure changes from being transmitted full force into the supply-tube unit. Connected to the expansion chamber was an inverted U-tube with its open end immersed in a water tank. An escape device was thus formed which served as a safety valve. By varying the water level in the tank it was possible to limit as desired the maximum pressure obtainable within the expansion chamber. Pressures above this maximum were relieved by air bubbling from the lower end of the inverted U-tube.

Ordinarily, the air entering the expansion chamber left by another

[11] Earlier investigators had noted that with reed vibrators of various types like responses were often repeated at one-half wave length intervals.

route, namely, the filter unit. This unit connected the expansion chamber and the infra-glottal resonator proper. As can be seen in Figure 1, it consisted of two enlarged tubes tapering into a narrower connecting tube. The two enlarged portions were filled with kapok, which was kept in place by wire gauze. The filter unit with its kapok packing was designed to serve two purposes. First, it was intended to keep the hiss of escaping compressed air from being transmitted to the infra-glottal resonator. Second, it was planned with the hope of keeping resonance effects and interactions from creeping back along the air supply system for an unknown distance, that is, to limit

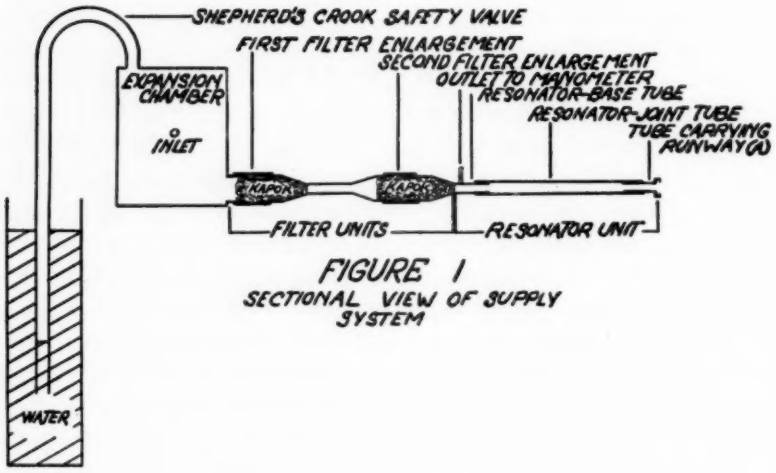

FIGURE 1
SECTIONAL VIEW OF SUPPLY SYSTEM

such effects to the infra-glottal resonator. The degree to which the filter unit served these purposes is discussed later.

The *infra-glottal resonator* was a telescoping cylindrical tube. Its base was a short tube soldered to the second filter-unit enlargement. Over the base slipped a thin-walled tube, called the *resonator-joint,* into which fitted a second short tube carrying the framework supporting the glottal cushions. The infra-glottal resonator assemblage was thus completed. Its construction was such that any infra-glottal air column length between 7.5″ and 34.5″ was obtainable. In practice, infra-glottal resonator length was usually varied in .25″ steps.

The vibrating elements, the glottal cushions, were constructed according to Ewald's plan.[12] A flattened rectangular runway was soldered to the end of the short tube fitting into the resonator-joint

[12] Ewald, *Pflüger's Archiv,* 176 ff.

(Figure 2). Into this runway slid the *glottal blocks* over which the glottal-cushions were formed.[13] Each block consisted of three parts: a *prong-piece,* a *support-block,* and a *tightening-nipple,* (Figure 3). Each glottal cushion was a rectangle of dental dam folded over the prong-piece. The latter was then slipped into position against the support block, and the tightening-nipple was screwed into place. The glottal cushions thus formed were flattened, balloon-like structures

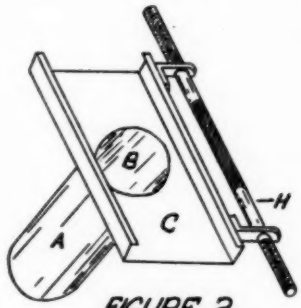

FIGURE 2
TUBE CARRYING GLOTTAL CUSHION RUNWAY

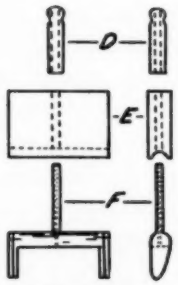

FIGURE 3
PARTS FORMING THE GRASS GLOTTAL BLOCKS (TWO VIEWS)

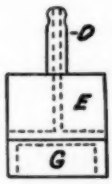

FIGURE 4
ASSEMBLED GLOTTAL BLOCK AND CUSHION

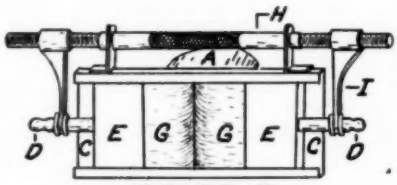

FIGURE 5
RUNWAY WITH GLOTTAL CUSHIONS IN PLACE

KEY TO FIGURES 2-5

A-RESONATOR TUBE CARRYING RUNWAY
B-OPENING IN BASE OF RUNWAY
C-RUNWAY
D-TIGHTENING-NIPPLE
E-SUPPORT-BLOCK
F-PRONG PIECE
G-GLOTTAL CUSHION FORMED BY MEMBRANE STRETCHED OVER PRONG PIECE
H-TWO-WAY THREADED BAR
I-CONNECTING ROD

with membranous walls. Moreover, the cushions could be inflated as desired through a 0.04″ cavity piercing both prong-piece and tightening-nipple.

When the two glottal cushions were placed within their runway the width of the glottal chink could be accurately regulated by means of a two-way threaded bar situated on one side of the runway (Figure 5). Suitable connecting bars ran from this threaded bar to

[13] Correspondence is invited concerning the details and techniques of construction.

the tightening-nipples of the two cushion units. With this arrangement the glottal cushions were moved equal distances in opposite directions when the threaded bar was turned. The pitch of the threading was such that a 360° rotation of the bar varied the glottal chink width by .05″.

In the base-tube of the infra-glottal resonator was a hole $\frac{1}{32}$″ in diameter. Extending outward from this hole was a nipple which was connected by rubber tubing to a special inclined-leg manometer. The $\frac{1}{32}$″ opening was so constructed that static pressure within the supply-tube was measured by the manometer.[14] Measurements were obtained in which the error due to suction effects at the hole was only about one per cent of the stagnation pressure. It seemed wisest to disregard this small error in absolute measurement because determination of the stagnation pressure would have complicated the apparatus and technique. Moreover, it may be assumed that because of its small diameter the $\frac{1}{32}$″ (.7mm.) hole had little effect on the resonance characteristics of the supply-tube.

The following system was used to inflate the glottal cushions. Compressed air was released slowly into a small expansion chamber which was also connected in series to a vertical-leg mercury manometer and a Y tube. From this Y tube equal lengths of rubber tubing ran to the tightening-nipples of the two glottal blocks, pressure being transmitted through the holes in these tightening-nipples to the interior of the membranous cushions. With this system maximum lip inflation pressures comparable to maximum driving stream pressures were obtainable.

When the apparatus described above was assembled, a stream of air, after passing through the large expansion chamber, filter unit, and infra-glottal resonator caused the glottal cushions to vibrate. The frequency of the cushion vibration was measured with a stroboscopic disc, the following method being used. A condenser micro-

[14] When a fluid is in motion, it can be made to yield two types of pressure measurement. In the first place, a flowing liquid when undisturbed by an obstacle possesses a pressure, called static pressure, which will remain constant as long as conditions are unchanged. In the second place, an obstacle placed in the flowing liquid will tend to pile up or retard the fluid behind it. When this happens some of the kinetic energy of the moving fluid will be transformed into potential energy in the form of increased pressure. This added pressure is termed stagnation pressure. See Prandtl, L., and Tietjens, O. G., *Applied Hydro- and Aero-Mechanics,* (New York: McGraw-Hill Book Co., 1934), 226 ff.

phone transformed the sound waves produced by the cushion-pipe into electrical impulses. These electrical impulses, after passing through a suitable amplifier system, activated a ½ watt neon lamp. The lamp was so shielded that the light from only one electrode fell upon the stroboscopic disc. Thus, the disc was illuminated once per electrical cycle and, consequently, once per each excursion of the glottal cushions.[15]

The stroboscopic disc used was of new design. Space limitations prohibit a complete description of it.[16] Briefly, it was experimentally determined that the disc possessed the following characteristics. Without changing the rotational speed of the disc, it could be used to measure all frequencies between 52 and 520 c.p.s. The disc was accurate to within one percent except below 100 c.p.s., where the limit of error was 1 c.p.s. The disc, moreover, possessed a unique advantage in that it gave a significant stroboscopic picture *only* when the frequency was within the range mentioned. There was no danger of judging the frequency to be within the range of the disc when it was not. Finally, because of the construction of the disc, a much simpler and more compact stroboscopic picture was obtained than would have been given by a conventional stroboscopic disc of similar range.

III. Resonance Characteristics of the Supply-Tube System

It will be remembered that the filter unit enlargements were filled with kapok, the assumption being that in this way the resonance effects of the supply-tube would be limited to the cylindrical infra-glottal resonator unit. However, because the packing used in the present experiment did allow the passage of a stream of air, it is hazardous to state categorically that it did not also transmit sound. Therefore, the apparatus in question was tested to determine its resonance characteristics, to discover the validity of the assumption that the packing eliminated sound transmission. Moreover, knowl-

[15] The validity of this assumption was proven by the following test. When the glottal lips were illuminated by the shielded neon lamp, they appeared at rest, indicating that the light frequency was in harmonic relation with the lip frequency. Moreover, the lips were seen in only one position, only one image being visible. Had the light frequency been a multiple of the lip frequency, more than one image would have been seen. Therefore, the light was flashing once per each double vibration of the cushion-pipe, and measuring the former frequency with the stroboscopic disc would be a measure to the latter.

[16] This disc will be discribed at some later date.

edge of supply system resonance characteristics would help evaluate whatever effect, if any, the supply system might have upon the vibrating glottal cushions.

An unusual method was used to determine supply system resonance characteristics because it proved more effective in the present instance than the conventional methods. An aluminum disc, rotated by a variable speed motor, was mounted so that twelve equi-spaced vanes at the disc's periphery passed the orifice of the infra-glottal resonator. Although the revolving disc itself produced only a faint whirring sound, an audible note resulted when the disc rotated in front of the resonator. The intensity of the resulting sound varied with disc speed, being greatest when the number of vanes passing the orifice equalled the natural frequency of the cavity.[17] In practice, disc speed was varied until maximum response of the resonator was obtained, at which point the apparatus was "locked" to maintain the optimal disc speed. The number of vanes passing the resonator orifice was then determined by stroboscopic means, an oscillator being used as the variable frequency source for activating a neon lamp which intermittently illuminated the slotted disc.

Various supply-tube conditions were investigated, all but the final series of tests being conducted with the glottal cushions removed from the apparatus. First, one filter unit enlargement was removed, leaving only one enlargement between the expansion chamber and the infra-glottal resonator. Next, the infra-glottal resonator and the adjoining filter enlargement were studied while mounted free from the rest of the supply system. Following this, the entire supply system was assembled and was tested both without and with the glottal cushions. On the basis of these experiments it became evident that the kapok packing did not keep the various cavities from influencing one another. It is concluded that, as the resonance characteristics changed each time a part of the apparatus was added or removed, the infra-glottal assemble formed a coupled system and its parts played roles of differing importance in determining the peak resonance of the system. However, progressive elongation of the infra-glottal resonator, other supply system conditions remaining unaltered, yielded

[17] This was proven by mounting a series of open cylindrical resonators in front of the disc and determining the conditions under which maximum response was obtained. In every case, after applying the necessary end correction, vane frequency equalled that vibrator frequency needed to induce resonance in the tube under consideration.

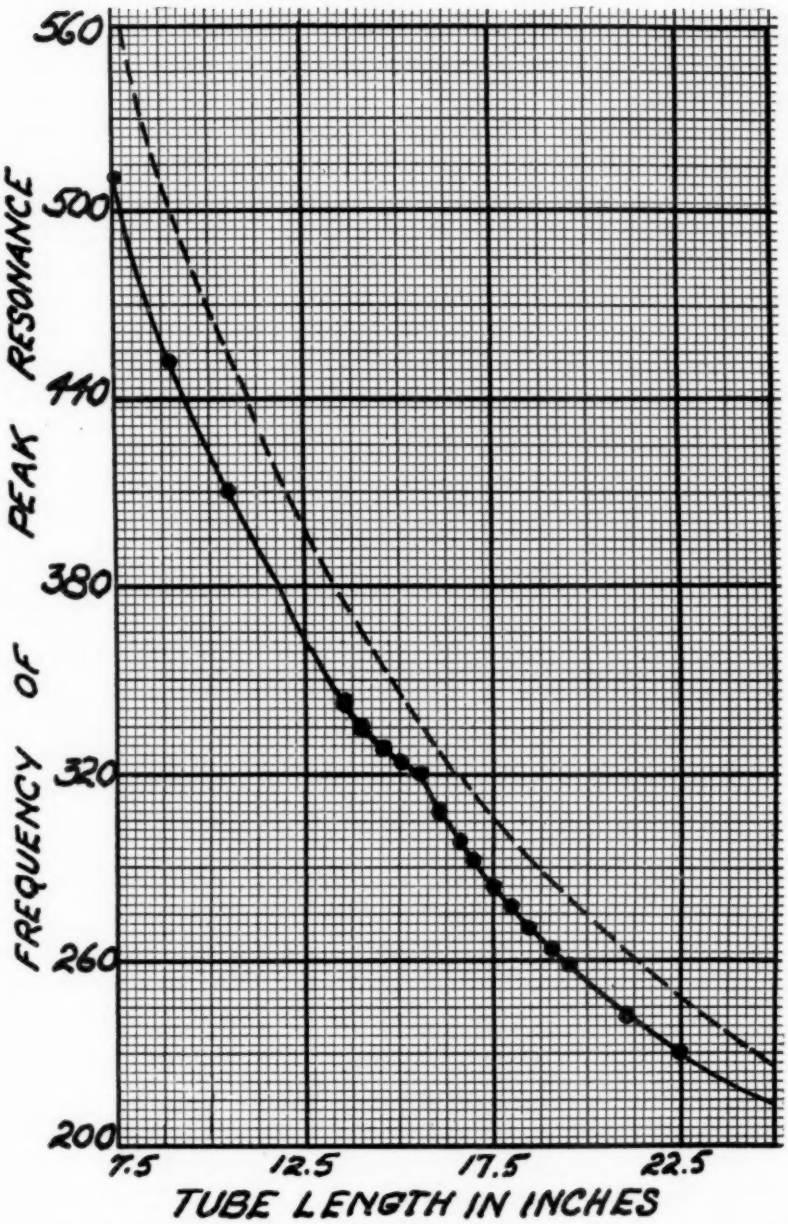

FIG. 6. Resonance peak frequencies obtained, with assembled supply system, with different infra-glottal resonator lengths. Cushion-pipe at rest. Solid-line curve connects experimentally observed peak frequencies. Broken-line curve is theoretical, representing ½ the wave-length of each frequency minus a constant of 4″.

resonance peaks of progressively lower frequency. It is the last fact which made it feasible to use this supply system in the experiments being reported.

The most regular resonance peak progression obtained with infra-glottal elongation was that yielded with the supply system intact and the glottal cushions in position. Figure 6 represents the resonance peaks noted under these conditions The solid curve connects points determined experimentally. It shows a progressive and definite shift in the resonance peak with changing tube length. Except for an anomaly represented by the hump centered at the 15.5″ tube length, the experimental curve parallels closely the dotted curve, which is theoretical. In computing this theoretical curve, a constant of 4″ was subtracted from one-half the wave-length of each frequency within the range considered. Had this constant been made 5.5″, the two curves would have been practically superimposed. Thus, by adding to the tube length resonating a given frequency an end correction of approximately 5.5″, the tube length would equal half the wave-length of that frequency. Therefore, except for the anomaly mentioned and the fact that a different end correction is necessary, the results obtained are comparable to those from open cylindrical resonators. On the basis of these results, it was felt that the use of the completely assembled system was justified. The kapok packing, while not completely eliminating coupling of the various cavities in the supply system, did lessen this coupling to a marked degree. Moreover, the packing did hinder the transmission of most of the hiss of escaping air found in the expansion chamber. If the glottal lips were to be excited by an air stream passing first through the infra-glottal resonator, a packing which would do these things was superior to no packing at all. It is doubtful whether any packing which would allow the passage of air would have completely eliminated the transmission of sound. Therefore, since an arrangement had been found which yielded a definite and progressive shift in resonance peak with tube elongation, it was decided to use this arrangement in the present study.

IV. Results of Experimentation

The present study aimed to discover whether or not the air cavity below a cushion-pipe had an influence upon the fundamental frequency at which the model larynx vibrated. The main experimental technique consisted of keeping all other conditions as constant as possible while the infra-glottal tube was being progressively lengthened by small equal steps. Resulting changes in the fundamental frequency

of the cushion-pipe were determined with the stroboscopic disc described earlier. Naturally, after the infra-glottal influences had been studied carefully under one set of conditions, one or more of these conditions were changed before infra-glottal influences were studied further. That is, the constancy of infra-glottal influences was checked by studying these influences under different driving air-stream pressures, lip inflation pressures, and glottal chink widths.

Due to the variety of controlled conditions used in the tests to be reported, the relations which may be deduced from this study are not limited to those involving the dependence of glottal cushion frequency upon supply-tube length. In the discussion which follows, several of these other relations will be pointed out briefly.

A. Varying the Tube Length (Uninflated Cushions). In the following paragraphs is given a résumé of the results obtained with uninflated glottal cushions when the infra-glottal resonator was progressively lengthened. Results can be most concisely presented in graph form, the abscissa points on each graph representing supply-tube lengths and the ordinate points indicating the fundamental frequencies at which the cushion-pipe vibrated. The first five units of investigation summarized here are typical of those obtained with uninflated glottal lips. In all five cases the lip pressure was 0″ H_2O, and the glottal chink was closed. Within each unit of investigation the driving air-stream pressure was kept constant. The average driving pressures used were respectively, 7⅝″, 9¾″, 11⅓″, 13″, and 20″ H_2O. In Figure 7 the results obtained with these five driving pressures are summarized by curves A, B, C, D, and E. Examination of Figure 7 reveals interesting infra-glottal resonance effects. It will be seen that with the shorter supply-tube lengths, elongation of the infra-glottal column yielded a progressive lowering of the cushion-pipe frequency. Soon, however, a tube length was reached with which the cushion-pipe was silenced. Further resonator elongation revealed a point at which the glottal cushions again sounded, this time at a frequency considerably higher than that recorded just before silencing occurred. As the resonator was made still longer, the progressive frequency drop again occurred and, in some cases, a second silence region was reached. Finally, with the 13″ and 20″ H_2O driving pressures a third response band was associated with the greatest infra-glottal resonator lengths. In other words, the infra-glottal influences observed in these five units of investigation may be summarized as follows: first, with a wide range of tube lengths the cush-

ion-pipe was inhibited; second, within a given band of responses there was a progressive drop in frequency as infra-glottal cavity length increased; third, when long enough tubes were used there was a repetition of the response band obtained with short tubes.

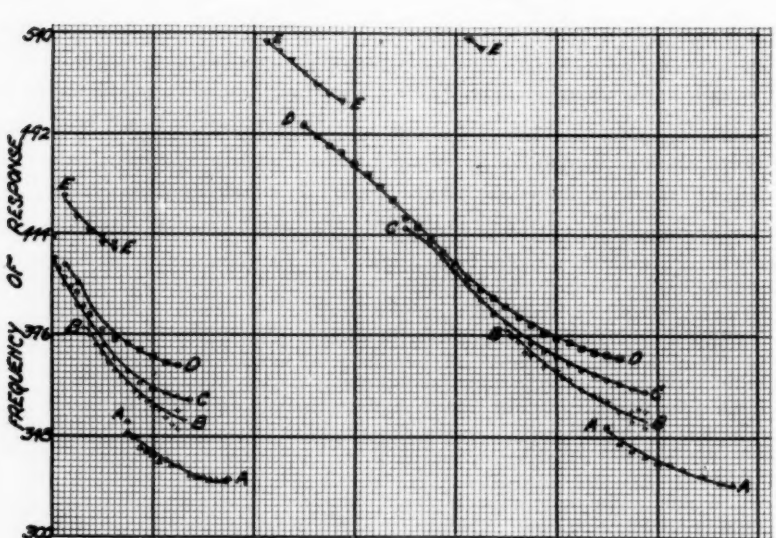

FIG. 7. Effect of infra-glottal resonator length upon frequency of cushion-pipe response obtained by varying infra-glottal resonator length. Cushions uninflated and fully approximated. Activating air-stream pressure for curves A was 7⅝″ H_2O; for curves B, 9¾″ H_2O; for curves C, 11⅓″ H_2O; for curves D, 13″ H_2O; and for curves E, 20″ H_2O.

FIG. 8. Effect of infra-glottal resonator length upon frequency of cushion-pipe response obtained by varying infra-glottal resonator length. Heavy cushions uninflated and fully approximated. Activating air-stream pressure was 11½″ H_2O.

It will be remembered that Wethlo,[18] using a cushion-pipe, found the sounding or silencing of his model larynx to be influenced by supply-tube length. Ewald interpreted Wethlo's results as being evidence of optimal and pessimal supply-tube regions.[19] According to him, an optimum is that continuous series of supply-tube lengths with which the cushion-pipe sounds. A pessimum, on the other hand, is the region of silence between adjacent optima. Because the results of the present study support Ewald's view, the various response bands will subsequently be referred to as first optimum (the band occurring with the shortest tube lengths), second optimum, and, where present, third optimum. Regions of no lip activity will be termed pessima.

Comparing the five units of investigation mentioned above, other relationships, dependent upon driving pressure, can be deduced from Figure 7. In the first place, for any one supply-tube length the greater the driving pressure, the higher the frequency of response. Again, the second optima, which are the most complete, show that the greater the driving pressure, the shorter the tube length eliciting the initial response within that optimum. Conversely, the lower the driving pressure, the longer was the tube length associated with the final response within the first optimum.

Two other units of investigation should be mentioned here. These were conducted with a new pair of glottal lips made of heavier rubber membrane than that used in the preceding tests. For both units, lip pressure was 0″ H_2O and the glottis was closed. The average driving pressures were respectively, 11½″ and 14″ H_2O. The response curves for these two units are practically identical except that with the 11½″ H_2O driving pressure a few less tube lengths were found with which the lips responded. The maximum difference in frequency obtained at any one tube length was 4 d.v. Because of this similarity it is evident that increasing driving pressure does not always raise the response frequency to a marked degree. However, both optima and progressive frequency shifts with supply-tube elongation again were obtained.

A comparison of Figure 8 with curves C and D of Figure 7 shows that, as would be expected, lip structure affects the frequency at which the glottal cushions vibrate. Figure 8 presents graphically the responses obtained with the heavy walled cushion-pipe when activated

[18] Wethlo, *op. cit.*, 278–279.

[19] Ewald, *Pflüger's Archiv*, 185–186.

by a driving pressure of 11½″ H_2O. This curve, as mentioned in the preceding paragraph, is practically identical with that obtained with a 14″ H_2O driving pressure, the curves being so similar that the latter need not be plotted here. Curves C and D of Figure 7 were obtained with driving pressures of 11⅓″ and 13″ H_2O, respectively. Hence, except for the weight of the membranous cushion walls, conditions were fairly similar and the curves in question may be profitably compared. Such a comparison shows that the heavier walled cushions vibrated more slowly. That is, other conditions being similar the greater the wall thickness of the cushion-pipe lips, the lower their response frequencies.

On the basis of the above described experimentation, which gives a typical sampling of results obtained in a considerable number of similar tests, it is concluded that *infra-glottal tube length affects in a definite fashion the response frequency of an* UNINFLATED *cushion-pipe.* When of unfavorable length, the infra-glottal resonator exerts an inhibitory influence. Moreover, successive optima for any one set of conditions cover similar frequency ranges.[20]

B. Varying Tube Length (Inflated Cushions). It may be that inflating glottal cushions changes the interaction between these vibrators and the supply-tube. One method of testing this question is to determine the relative influence of the supply-tube on uninflated and inflated glottal lips. What influence, then, does the infra-glottal resonator have upon inflated cushions?

Figure 9 summarizes another five units of investigation. In these five units, the glottal closure was complete. The average driving airstream and lip (glottal cushion) pressures were, respectively, as follows: 6″ and 8″ H_2O; 8⅓″ and 10½″ H_2O; 9½″ and 11½″ H_2O; 14″ and 18″ H_2O; 18″ and 23″ H_2O. In Figure 9 the frequencies recorded under these conditions are shown, respectively, by curves A, B, C, D, and E. Examination of these curves allows the following observations to be made. First, optima and pessima were evidenced. Second, within any optima there was a drop in frequency of response with added tube length. Third, this drop was less abrupt than that occurring when the lips were not inflated.[21] Fourth, with some

[20] That these ranges are even more similar than appears at first glance will be shown later.

[21] Figures 7 and 9 may be compared because the same glottal cushions were used in both series of tests.

supply-tube increments, although the lips were sounding, no frequency change occurred. Fifth, the first optimum was followed by a second one involving the same frequencies but showing smaller frequency changes for similar tube lengthening. Sixth, as lip and driving pressures increased, there was a rise in the lip frequency associated with a given supply-tube length. Moreover, as these pressures were increased the first response within the second optimum was found with progressively shorter tube lengths. Finally, the first set of optima show that the greater the pressures, the shorter the supply-tube at which silencing

FIG. 9. Effect of infra-glottal resonator length upon frequency of cushion-pipe response obtained by varying infra-glottal resonator length. Cushions fully approximated. Activating air-stream pressure and intra-cushion pressure were, respectively, for curves A, 6″ and 8″ H_2O; for curves B, 8⅓″ and 10½″ H_2O; for curves C, 9½″ and 11½″ H_2O; for curves D, 14″ and 18″ H_2O; for curves E, 18″ and 23″ H_2O.

occurred. These results, it will be noted, are in many respects similar to those yielded by uninflated glottal cushions.

In order that comparisons between various units of investigation may be followed more easily, there is one point which should be mentioned here, even though its validity will not be discussed until later. Many optima, it will be observed, are incomplete. In the present experiment, the infra-glottal resonator length could be varied only within the limits of 7.5″ and 34.5″. In many instances the completion of an optimum necessitated either a shorter or longer supply-tube than the apparatus allowed. As will be shown, every optimum may be considered as a close counterpart of any other optimum obtained under like driving pressure, lip pressure, cushion mass, and

glottal chink width conditions. To illustrate, consider the D curves in Figure 9. The first optimum extends between frequencies of 405 and 364 c.p.s., the second between frequencies of 428 and 368 c.p.s., and the third between frequencies of 424 and 417 c.p.s. Had tube lengths shorter than 7.5″ been used, the frequencies within the first optimum would have extended up to about 425 c.p.s. Similarly, using tube lengths greater than 34.5″ would have allowed the third optimum to be traced down to a frequency of approximately 370 c.p.s. In other words, had the apparatus accommodated the necessary supply-tube variations, each of these three optima would have covered a frequency range of approximately 60 c.p.s. Moreover, approximately the same frequencies would have been covered by each optimum. The first and third optima were incomplete only because a sufficient range of supply-tube lengths was not available.

The fact that the optima obtained with the present apparatus were often incomplete was not a serious drawback. This follows because of the point just mentioned, namely, that each successive optimum mirrors the preceding one. Hence, where the optima were incomplete it was possible to compute the corresponding "typical" complete optima by combining the known parts of the recorded optima. Such composite "typical" optima could be used to study the effects of the different experimental variables.

During the tests summarized in Figure 9 both driving and lip pressures were varied together. Therefore, the conclusion that the greater these pressures the higher the frequency elicited with any tube length is indefinite and tells nothing of the separate roles of these pressures.

To learn something of the role of lip pressure, the comparison shown in Figure 10 was made. The driving pressures for the two units shown here were approximately equal, averaging 8⅓″ and 8″ H_2O respectively, while the average lip pressures were, in order, 10½″ and 27⅔″ H_2O. It should be mentioned that with the 27⅔″ H_2O lip pressure only the second and third optima were obtained. That is, to elicit a first optimum under these conditions the supply-tube would have had to be less than 7.5″ long. Therefore, in reaching the conclusions which follow, second optima were compared. The left curve of the upper two response bands was matched with the right curve in the lower response bands. It will be seen that the increased lip pressure raised the average frequency level about 160 c.p.s. This would lead one to assume that, other things being equal, greater lip pressures induced more rapid vibration of

the glottal lips. Moreover, with the higher lip pressure, both the silencing and sounding within the second optimum occurred with much shorter tube lengths. Finally, the drop in frequency per unit elongation of the supply-tube was much greater for the greater lip pressure.

The assumption just made, namely, that greater lip pressures are associated with higher response frequencies, leads one to ask if this

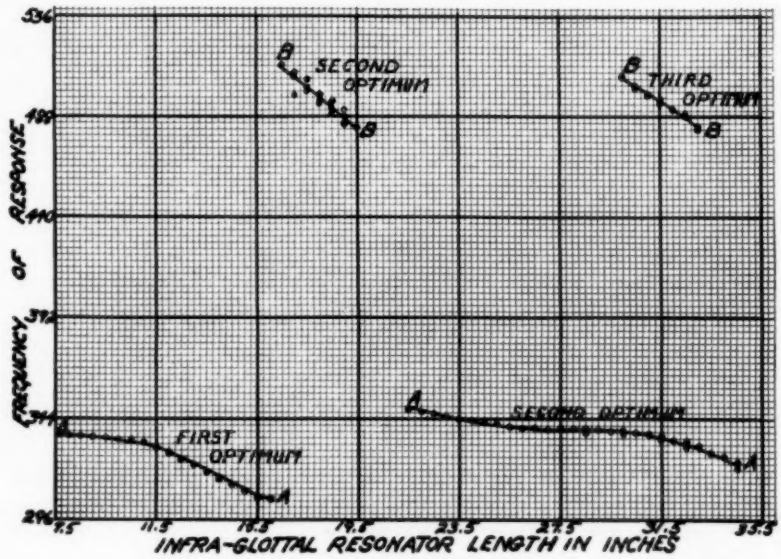

FIG. 10. Effect of varying intra-cushion pressure on frequency of cushion-pipe response. Cushions fully approximated. Activating air pressure, about 8" H_2O. Intra-cushion pressure for curves A, 10½" H_2O; for curves B, 27⅔" H_2O.

same relation holds when comparing optima obtained with uninflated and inflated lips. If it does hold, one would expect uninflated lips to have the slowest rate of vibration, other things being equal. That this is not the case can be determined by studying Figure 11, which presents the results of three investigational units in which the driving pressures were approximately equal. Curves A (solid line) show the results obtained with uninflated lips, curves B (broken line) show those obtained with a lip pressure of 1¾" H_2O, and curves C (solid line) summarize what occurred with 11½" H_2O lip pressure. It will be seen that the slightly inflated lips followed approximately the same frequency changes as the uninflated lips. The one marked difference was that the slightly inflated cushions vibrated when coupled

with more infra-glottal tube lengths. Interestingly enough, responses of the highly inflated lips were of lower frequency than those of the slightly inflated or uninflated lips. This would seem to indicate that at some point in the lip inflation process, factors were at work causing the lip frequency to drop. Once this drop has occurred, one concludes from the previously reported comparison of lip pressure influences, additional lip pressure increments cause the vibrational frequency of the lips to rise.

The results presented above point toward the conclusion that inflated and uninflated lips are not entirely analagous. True, as the

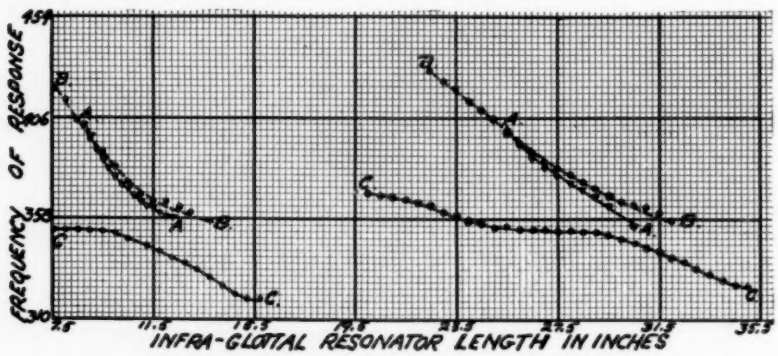

FIG. 11. Effect of transition from uninflated to inflated cushions on frequency of cushion-pipe response. Cushions fully approximated. Activating air stream pressure, about 9¾" H_2O. Intra-cushion pressure for curves A, none; for curves B, 1¾" H_2O; for curves C, 11½" H_2O.

tube length is increased, both show optima and pessima response bands. Both evidence progressive frequency changes within any optimum. Greater driving pressures seem to elicit higher responses with both. However, re-examination of Figure 11 will show differences in addition to the anomaly mentioned in the preceding paragraph. With the inflated lips, more tube lengths allowed sounding, the progressive drops were much smaller, and at the center of an optimum supply-tube elongation did not affect response frequency.

C. Changes in the Glottal Chink Width. During the investigational units reported above, the glottal opening was the same, the glottis in all cases being closed. The following test was conducted to give some indication of the influence exerted by glottal slit width. Throughout the test driving pressure was kept as constant as possible, being 12 1/20" H_2O. The lips were uninflated. The glottal slit was widened an additional 0.0125" for each new unit of the test.

Using these intervals, it was found that when the glottal width was 0.0375″ or more, no lip responses were obtained. However, cushion-pipe responses were obtained with glottal chink widths of 0.00″, 0.0125″, and 0.025″. With all three widths, the lip frequencies were practically identical for like supply-tube lengths. Under the conditions mentioned, increased width of the glottal chink did not alter to any appreciable extent the frequency of lip vibration. However, it was found that the wider the glottal slit, the fewer the tube lengths with which the cushion-pipe would respond. Thus, there is indication that the glottal width, while having little influence on the response frequency, may determine in part the number of infra-glottal resonator lengths with which responses occur.

D. Driving Pressure Fluctuations. The pressure of the air stream activating the cushion-pipes could not be kept completely constant. It underwent slight fluctuations. Consequently, a careful record of driving pressure changes was kept during each investigational unit so that the results of those units in which the pressure variations had been excessive could be discarded. This precaution was necessary because chance frequency variations due to driving pressure fluctuations might have obscured significant relationships.

Examination of the results of many investigational units shows that in addition to the irregular driving pressure fluctuations mentioned, there was a regular pressure fluctuation related to supply-tube length. This regular variation, the exact value of which could not be determined because of the concomitant irregular pressure fluctuations, ranged between ½″ and 1″ H_2O. With the higher frequencies of each optimum, the pressure dropped to a minimum. As one progressed through the optimum, the driving pressure rose slowly until it reached its maximum value just before the lowest frequencies of the optimum were produced. Throughout the succeeding pessimum maximum pressure persisted. With the initiation of the next optimum the pressure again dropped to a minimum and the cycle was begun again. Without attempting to interpret this phenomenon, it is evident that this periodic pressure change depends in some way upon the interaction between the cushion-pipe and the supply-tube.

E. Summary. The experimentation reported above is typical of more extensive results obtained in studying the factors influencing the vibrational frequency of a cushion-pipe larynx. A number of conclusions, which may be drawn from this study, are illustrated by

the material presented here. All tests consistently revealed that altering supply-tube length exerted a definite influence on the activity of both inflated and uninflated glottal cushions. This influence is demonstrated by the silencing of the vibrator when certain tube lengths were used and by the progressive frequency drop produced within any optimum by elongation of the infra-glottal resonator. However, the same glottal lip frequency was not always evoked with the same tube length. That is, it was also noted that increasing either the driving or the lip pressure raised the response frequency, that the transition from uninflated to inflated glottal cushions was characterized by a lowering of response frequency but that subsequent lip pressure rises increased the rate of vibration, and that widening the glottal chink did not alter response frequency but did decrease the number of tube lengths with which sounding occurred. In other words, lip pressure, driving pressure, cushion wall thickness and probably other factors all play a part in determining lip frequency. Therefore, it may be said that (with the apparatus described) the sub-glottic resonator exerted a control over the cushion-pipe periodicity only after a complex of conditions had determined a limited frequency range within which the cushion-pipe could vibrate. Instead of forcing the cushion-pipe to vibrate beyond this range, certain resonator lengths simply silenced the former. Inflated cushion lips, moreover, were less affected by resonator change than were uninflated ones. As the resonator was elongated the inflated lips showed more extensive optima and less frequency change per unit elongation.

V. Interpretation of Optima

It was shown experimentally that in the absence of a supra-glottal resonator an infra-glottal resonator influenced the vibrational periodicity of a cushion-pipe. This influence was characterized by the existence of optimal and pessimal supply-tube lengths. In considering this influence there arise two questions which should be discussed here. First, what relation existed between successive optima? That is, how did the factors determining the first optimum compare with those determining other optima obtained under similar experimental conditions? Second, what relation existed between the natural frequency of any sub-glottic resonator length and the response frequency obtained when the cushion-pipe was coupled with this resonator length?

A. Relation Between Successive Optima. Ewald,[22] in reviewing

[22] Ewald, *Pflüger's Archiv*, 185–186.

Wethlo's experiment with a cushion-pipe, suggested that successive optima followed each other at ½ wave-length intervals. Thus, the second optimum occurred when the supply-tube was longer by ½ wave-length than it had been during the first optimum.

It was decided to use the results of the present experiment to test a modification of Ewald's theory. Specifically, might it be that, regardless of their positions within successive optima, like frequencies follow one another at ½ wave-length intervals? It was reasoned that if the difference between two supply-tube lengths associated with successive appearances of a given frequency proved to be half the wave-length of that frequency, it could be concluded that like responses are repeated at ½ wave-length intervals. One may state immediately that analysis of the experimental data supported this hypothesis. As long as all conditions except supply-tube length were kept constant, any frequency which was recorded twice appeared for the second time when the supply-tube elongation equalled approximately one-half the wave length.[23] Whether the glottal cushions were inflated or not, successive optima were separated by a variable gap which at any response frequency equalled half the wave-length of that frequency. The rule which Ewald posited for the centers of successive optima held for other frequencies within the optima. That is, the inter-optimal gap was variable and was directly related to the response frequencies obtained.

To be sure, there were within each investigational unit certain frequencies that appeared only once, which were found in only one optimum. At first one might consider the presence of such frequencies as contradictory to the ½ wave-length relation posited above. It must be remembered, however, that only a limited number of infra-glottal resonator lengths were obtainable with the present apparatus. Analysis showed that when the appropriate ½ wave-length value was added to or subtracted from the supply-tube length with which any such frequency was evoked, the resulting tube length was either longer or shorter than any which the apparatus would allow. Hence, because the ½ wave-length relation was evidenced when observational data allowed it to be tested, it was assumed that the relation also held for supply-tube lengths beyond the range studied experi-

[23] In reaching this conclusion it was assumed that minor discrepancies were accounted for by slight variations in experimental conditions, possible differences in stroboscopic disc readings, and the fact that the velocity of sound in this case may not have been exactly that used in calculating ½ wave-length values.

mentally. That is, had long enough or short enough infra-glottal resonator lengths been used these frequencies would have reappeared.[24] It was further assumed that for any given frequency these long or short infra-glottal settings would have differed from the experimentally recorded setting by a ½ wave-length interval. In other words, some optima were incompletely recorded because not enough supply-tube lengths had been employed to finish the exploration of these optima. Furthermore, it is assumed that unexplored parts of incomplete optima would conform to the ½ wave-length relation.

Accepting the above point of view, whenever one is dealing with a frequency within the second or third optimum, the infra-glottal cavity may be thought of as consisting of two parts. A person may imagine a smaller portion which equals the shortest tube length associated with the frequency. The second and larger portion would then equal an appropriate integral multiple of one-half the frequency's wave-length. Now, because the addition of the larger section adds no new effects, the small section of the hypothetically divided tube must be the tube length which is critical in allowing the infra-glottal cavity to influence the glottal cushions so that the particular frequency is evoked. Moreover, this smaller section must be of such length that it lies within the first optimum. This follows because first optimum tube lengths are the shortest with which cushion-pipe responses occur. Since tube lengths beyond those serving the first optimum introduce no new effects, any study of the interaction between sub-glottic resonator and cushion-pipe may limit itself to an analysis of the factors at work within the first optimum. That is, by determining the inter-play between the cushion-pipe and the tube lengths associated with the first optimum, one has explained the influence which a sub-glottic resonator exerts on a cushion-pipe. It is necessary merely to say that when the tube has been elongated ½ wave-length, the same influence will be at work again.

B. Relation Between Resonator and Cushion-Pipe Frequency. It seems logical to assume that the response of the glottal lips would

[24] There were a few frequencies to which this conclusion is not applicable. Often the highest and/or lowest frequencies within one optimum did not reappear in the succeeding optimum, even though according to the theory being outlined these frequencies should have been observed again. In other words, the optimum obtained with the shorter supply-tube lengths often covered a slightly greater frequency range than the optimum associated with longer infra-glottal resonator settings.

be most easily obtained when their natural frequency coincided with that of the sub-glottic cavity. Under these conditions the two systems would vibrate at a common rate natural to each and inhibitory factors would be minimized. Conversely, one would expect inhibitory factors to become more marked as the natural periodicities of the two systems became more unlike. Thus, assuming the laryngeal model's natural periodicity to be constant for a given set of experimental conditions, progressive alteration of reasonator length would, by changing the natural periodicity of the supply system, increase the inhibitory interaction. Within limits the model still would vibrate despite the discrepancy in natural frequencies. Eventually, however, it would be silenced. Moreover, assuming that approximately equal frequency discrepancies would be necessary to produce the silencing found at the ends of an optimum, one would expect the most favorable tube length to be located near the center of the optimum. That is, a frequency yielded near the center of the first optimum would equal the natural periodicity of both infra-glottal tube and glottal lips.

If this point of view is valid, the experimental results presented earlier should substantiate it. One need merely check each first optimum to discover if at any point within the optimum a response frequency was evoked which equalled the previously determined resonance frequency of the supply-tube setting being used at the moment. If this point of coincidence was found to be at the center of the optimum it would be evidence in favor of the hypothesis under consideration. Naturally, before the centers of partially recorded first optima could be determined, the missing parts had to be computed from the corresponding second optima. Moreover, following reasoning previously outlined, it was taken for granted that subsequent optima mirror the corresponding first optimum. Hence, the study could limit itself to first optima.[25]

Comparing experimental results revealed that in most first optima no cushion frequency coincided with the natural frequency of that supply-tube length with which the cushion frequency was evoked. In those instances where there was a coincidence, it occurred not near the mid-point of the optimum, but rather adjacent to the transition into the succeeding pessimum. These results throw doubt on the point

[25] In practice, second and third optima could also be ignored because within these optima the response frequency of the model larynx always differed widely from the observed resonance frequency of the corresponding supply-tube setting.

of view under consideration. Accepting the hypothesis being tested, one would be forced to assume that for some reason the interaction between glottal cushions and sub-glottic resonator caused the lips to *cease* vibrating either before the natural periods of the two systems had become equal or immediately after the cavity had been elongated to a point where the natural periods were identical. In either case, it would mean that without inhibiting the lip vibration the discrepancy in natural frequencies could be *much greater* when the cavity periodicity exceeded that of the model larynx than it could be when the reverse was true. As this last is improbable, some other explanation must be sought.

It will be remembered that the resonance peaks of the supply system were determined when the glottal cushions were at rest, that is, when no air stream was passing through the system. It is possible that the vibration of the cushions changed the resonance characteristics of the supply-tube. In other words, the natural period of the supply-tube may have been altered so that the resonance peak curve, obtained when the cushions were at rest, did not describe the supply-tube characteristics existing during sounding of the model larynx. It is now necessary to examine what type of change might have occurred.

It has been shown that some vibrators when connected to a supply system respond best if a pressure loop (displacement node) exists at the point where the vibrator is located. Helmholtz,[26] in considering membranous reeds, pointed out that the most adequate reed response must occur when the reed is located at a displacement node of a standing wave within the air column. That is, the vibrator must be at a point of maximum pressure-amplitude. Although Helmholtz was discussing supra-vibrator cavities, the same may be posited for the supply-tube. At the vibrator the two cavities meet. Therefore, at this spot a similar condition must exist in each. Richardson stated that an organ-pipe reed vibrated most freely when located at a pressure loop in the column of air formed by the supply-tube and organ-pipe proper.[27] In this connection, it is interesting to note that singing flames, which may be inhibited by unfavorable supply-tube lengths, also function best when a pressure loop exists at the site of the flame. Thus, it is apparent that in various physical systems the supply-tube

[26] Helmholtz, H. L. F., *Sensations of Tone,* trans. Ellis, J., (London: Longmans, Green and Co., 1897) p. 97.

[27] Richardson, E. G., *Sound* (New York: Longmans, Green and Co., 1927), p. 176.

exerts a favorable influence when the vibrating body is at a pressure loop of the standing wave within the supply-tube. There seems to be no reason why such a relation could not have held for the apparatus used in the present study. Moreover, if such a relation did exist, the natural frequency evidenced by the supply-tube during cushion activation could not have been the same as the natural frequency evidenced when the vibrator was at rest. To explain, an air cavity vibrating in resonance with an adjacent sound source possesses a *pressure node* (displacement loop) at the orifice communicating with the external air. Such conditions may be assumed to have occurred when, during the present study, the resonance characteristics of the infra-glottal cavity were determined. At that time a *pressure node* (displacement loop) undoubtedly existed at the glottal chink. Standing waves set up within the supply system accommodated this necessity. In contrast, assuming that maximum *pressure* changes existed at the glottal opening when the cushions were excited by an air stream,[28] a new set of standing waves would be set up to accommodate the new orifice condition. Consequently, if the shape and size of the cavity were unaltered, the frequency which would induce the second set of standing waves would differ from that associated with conventional resonance. To the author, this last hypothesis explains the previously noted discrepancy between experimentally determined resonance peak frequencies and mid-optimum frequencies. That is, the resonance peak curve obtained with the vibrator at rest is no indication of the tube characteristics in existence when the glottal cushions were vibrating. Consequently, the mid-point frequencies within first optima failed to coincide with the natural periodicities of the corresponding supply-tube lengths, when these natural periodicities were those determined with the vibrator at rest. However, it is not implied that in actuality the supply-tube and vibrator periodicities did not coincide at the mid-point of an optimum. All that is claimed is that when the model larynx was activated the supply-tube periodicity was altered and that the present study failed to measure this altered periodicity. In other words, the glottal cushions and the supply-tube form a coupled system characterized by a pressure loop at the glottal slit.

[28] It is not implied that a complete displacement node occurred at the glottal opening. The presence of movable cushions at this point precludes such a possibility. However, it is implied that pressure changes rather than displacement changes were predominant here.

In all likelihood, the hypothesis just stated is too simple. It merely considers the standing wave conditions. The presence of a moving air stream, changes in glottal slit width due to inflating the cushions, and variations in the average size of the glottal opening due to vibration of the glottal cushions also may have altered the natural periodicity of the supply-tube.

In conclusion, it may be said that the present study does not allow a definitive description of the influence which the infra-glottal cavity wields over the vibrating cushion-pipe model larynx. This description must await refined experimental techniques. It had been shown, however, that this influence is not explainable in terms of those resonance responses of the supply-tube which are obtained when glottal cushions are at rest. It is probable that activating the glottal lips alters standing wave conditions in the supply-tube in such manner that pressure loop (displacement node) conditions predominated at the glottal chink.

C. Implications Regarding the Human Vocal Mechanism. It must be remembered that the present study utilized a system constructed to allow accurate changes in specified conditions rather than to approximate fully the functioning human larynx. However, the apparatus was built to bear some resemblance to the human larynx and infra-glottal air column. Therefore, it seems wise to present a few suggestions, based on the present study, regarding the possible functioning of man's vocal mechanism. Of course, these must be considered merely as *suggestions*. There main value lies in pointing the way to further study.

The dependence of optima and pessima upon supply-tube length suggests that the human bronchial tree may have a facilitating or inhibitory effect upon vocal fold vibration. Giesswein, among others, held that such was the case. However, because the bronchial tree is subject only to slight length changes, it is usually assumed that if the bronchial tree acts as an infra-glottal resonator it facilitates the action of the vocal folds at its own natural frequency level and exerts a less favorable effect on them as the fold note departs from this level. West [29] has criticized this belief, pointing out that within the range of the human voice there are no frequencies at which vocal fold vibration is completely inhibited. On this point, the present study

[29] West, R., "A View of the Larynx through a New Stroboscope," *Quarterly Journal of Speech*, XXI (1935), p. 460.

has a bearing. When during the present study, for example, the 10″ infra-glottal resonator was used, various cushion-pipe conditions yielded response frequencies which varied from 302 to 443 c.p.s. Bearing in mind that human vocal fold conditions can be altered in more ways than could cushion-pipe conditions, a wider range of response frequencies could probably be achieved by the human larynx even in the face of bronchial tree characteristics which were unfavorable. Thus, a hindering rather than a silencing effect might be the result. Thus, West's criticism may be too extreme.

If the trachea and bronchi exert an influence on vocal fold function, it is probable that this influence is not "resonance" in the usual sense of the word. That is, the sub-glottic cavity probably does not merely amplify suitable partials of the vocal note. It is probable that at the orifice of this infra-glottal air column (at the vocal fold level) a pressure loop tends to appear. Assuming the existence of such a pressure loop, there would be little tendency to transmit sound to the supra-glottal regions. However, the pressure fluctuation would tend to exert a strong influence on the vibrator. Another interesting suggestion is that the presence of this pressure loop may change the natural periodicity of the bronchial tree. This last point, if true, has definite implications. For example, Giesswein's determination of the resonance frequencies of the human tracheal system would,[30] according to this view, be incorrect. His reasoning is based on tests in which various "tracheal" systems were made to respond as conventional resonators, their open ends therefore being pressure node (displacement loop) sites. If a pressure loop exists at the glottis during phonation, Giesswein's computations do not hold for the functioning human system.

It must be remembered that during the present study no supra-glottal resonator was present. A hint as to the effect which such a cavity would have is given in the writing of Wethlo,[31] who reported briefly that optima and pessima effects disappeared when he added a sizeable supra-glottal cavity. Under these circumstances, the response frequency did not vary markedly with supply-tube elongation. But Wethlo's experimentation on this point is meager and the problem must be studied more fully. At present, the writer feels that in the presence of a supra-glottal cavity, the infra-glottal resonator and glottal cushions would still be coupled, but that the supra-glottal

[30] Giesswein, *op. cit.*

[31] Wethlo, *op. cit.*, p. 279.

resonator would also interact with this system in such manner that the common frequency of the assemblage might be affected. A like interaction may possibly exist in the functional speech mechanism.

In conclusion, it is apparent that there are many problems which the present study has not solved. It has yielded a general description of the interplay between a cushion-pipe model larynx and its supply-tube. It has furnished evidence pointing toward some of the possible factors functioning in this interplay. On the other hand, a complete analysis of these factors awaits new experimental techniques and apparatus. In addition, the findings presented here need to be supplemented by a study of a similar system to which a supra-glottal resonator has been added. Finally, the present findings do not answer any questions regarding the living vocal mechanism. They merely indicate certain questions and problems which studies of the living mechanism itself must answer.

VI. Summary

While the present study grew out of a general problem facing voice science, namely, the role of the trachea and bronchi in voice production, it was limited to a specific investigation of the influences exerted by an infra-glottal resonator upon the vibrational frequency of a cushion-pipe model larynx.

The model larynx used in the present study was an improved copy of the small cushion-pipe reported by Ewald. The vibrating elements of this model were two small, inflatable, rubber-membrane balloons. They were carried on specially shaped brass supports and were so attached that glottal chink width could be controlled at will. Below the model larynx was a variable-length infra-glottal resonator, which was part of the air supply system. This supply system also included an expansion chamber, a safety-valve device, and two filter units limiting the transmission of sound into the infra-glottal resonator. A manometer, connected to this supply system, recorded the infra-glottal pressure of the air stream activating the glottal cushions. The vibrational frequency of the glottal cushions was measured with a stroboscopic disc illuminated by a sound-controlled neon tube.

When the resonance characteristics of the supply system were determined, it was discovered that the cavities behind the glottal lips formed a coupled system, that the infra-glottal resonator was not responding independently of the filter enlargements and expansion chamber. However, when the apparatus was completely assembled

and the model larynx was in place, the sub-glottic system showed a regular and progressive lowering of natural frequency as the infra-glottal resonator was elongated.

The influence of the infra-glottal resonator on cushion-pipe activity was studied by progressively varying the supply-tube length while driving pressure, lip pressure, lip mass, and glottal slit width were kept constant. When a new unit of investigation was initiated, one of the above mentioned constants was altered. Thus, considering all tests involving the variable supply-tube method, the so-called constants were also studied in different combinations.

It was found that some infra-glottal tube lengths inhibited the cushion-pipe, there being several bands of cushion response separated by resonator lengths with which the glottal lips were silent. In addition, within any response band the glottal note was lowered as the supply-tube was lengthened, the successive response bands, or optima, covering similar frequency ranges. These phenomena occurred with both uninflated and inflated cushions, but with inflated lips the frequency drop per unit tube elongation was less and there were some tube length increments which produced no frequency change.

With uninflated cushions, greater driving pressures produced higher frequency responses. Again, as the driving pressure rose both the first and last responses within each optimum were elicited with shorter tube lengths. With inflated cushions, the simultaneous increase of driving and lip pressures produced similar results.

The responses of very slightly inflated cushions resembled most closely those of uninflated lips, both vibrating more rapidly than highly inflated cushions. However, with highly inflated cushions, greater lip pressures produced higher pitched responses.

Widening the glottal chink did not affect the frequency of the uninflated cushion responses but did limit activity to fewer resonator lengths.

While the infra-glottal resonator affected the periodicity of the cushion-pipe vibration, other conditions helped determine the frequency level at which the cushion-pipe would vibrate, and there were limits beyond which cushion frequency was not forced by altering any of the experimental conditions.

Ewald's theory that successive optima follow one another at ½ wave-length intervals was substantiated. Moreover, it was found that the gap between various points of successive optima was not constant, i.e., was not equal to ½ wave-length of the central fre-

quency of the optimum. Instead, the gap between successive appearances of a given frequency was half the wave-length of that frequency, regardless of the position of the frequency within the two optima in which it appeared.

As subsequent optima mirror the first optimum, it is merely necessary to study the factors at work to produce the first optimum in order to determine the exact interaction between infra-glottal resonator and cushion-pipe.

It is probable that conditions at the glottal chink were changed the moment the cushion-pipe began to vibrate. Prior to this vibration any resonance within the infra-glottal cavity was characterized by a displacement loop at the glottal slit. But as soon as the cushion-pipe was activated, displacement node conditions probably superseded the displacement loop at the glottal opening. If this be true, the infra-glottal tube did not function as a conventional resonator during the cushion-pipe activity.

A STUDY OF THE MEDICAL HISTORY OF STUTTERING CHILDREN

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I. The Problem, Source of Material, and General Procedure.

THE problem of stuttering does not lend itself to easy solution. So many experiments have been attempted, so many investigations have been made, that it now seems fairly certain that the etiology of stuttering will not be recorded in a few sentences. Through overstatement and unwarranted claims, much of the research in the past, indeed, has beclouded rather than clarified the issues. Turgidity too often has been mistaken for profundity. "One does not get nearer to the ideal state any the more quickly by trying to force the shortest cut to the goal of strictest unity, by proclaiming meager beginnings as the final principles, and by owing to the facts what is saved on the theories." [1]

This study of the medical record of stuttering children represents a meager beginning without any thought of establishing final principles. It has been prompted by a remark familiar to every speech clinician: "My son began to stutter immediately after a severe illness." Now we should like to know if it is true that stuttering is a sequela of any disease or group of diseases. When we speak of stuttering we realize that we designate only the outward manifestations of an underlying disorder, dysphemia. West [2] states: "The sufferer from dysphemia stutters. His speech is blocked, but the blocking in speech is not the entire picture of dysphemia, any more than the bowing of the legs is the entire picture of rachitis. Dysphemia is the condition; stuttering is the manifestation of that condition. Stuttering we can describe exactly. Dysphemia is as yet much shrouded in mystery. Stuttering is a phenomenon; dysphemia is an inner condition. Stuttering is characterized by sudden and frequent spasms, tonic, and clonic, usually limited to the neuromuscular mechanism of speech (but sometimes spreading to other somatic nerves and muscular systems) during which the flow of speech is interrupted, and in the intervals between which the speech, though fluent,

[1] Kohler, W., *The Mentality of Apes.* Harcourt Brace and Co., 1923, p. 8.

[2] West, Robert, "Disorders of Speech, Reading and Writing." *Practice of Pediatrics.* Vol. IV; 14; W. F. Prior and Co., 1937, p. 22.

may exhibit vocal tenseness and even, in some cases, articulatory clumsiness."

The perspective of this investigation should be made clear. It is not our purpose to prove or disprove a causal relationship between physical disorders and dysphemia. We are inquiring only into a chronological relationship between stuttering and disease, a relationship that has been interpreted by the layman to have a causal connection.

So far as it can be learned no comprehensive survey of the clinical and hospital records of stutterers previously has been made. Isolated cases with the medical records have been reported from time to time. Several investigations have been made, however, to determine whether the general physical index of the stutterer approaches normality.

The physiological researches in stuttering may be grouped in three fields: neurology, endocrinology, and physiological chemistry. In neurological investigation, West [3] and Travis and co-workers at the University of Iowa have made contributions. It was West who first pointed out that the rate of jaw and brow movements is slower in the stutterer than in non-stutterers. Travis and colleagues in a series of studies on action currents [4, 5, 6] draw the following conclusions: (1) "In by far the greater number of trials the action currents from one arm precede those from the other by a short interval . . . In 'right-handed' stutterers, the greatest number of leads is in the left arm, and the number of simultaneous leads is much greater than in the normal speakers." [7] (2) "The knee and achilles reflexes in our cases have shown a greater amplitude during the speech of normal speakers than during silent periods. In our stutterers there is, during stuttering, an increase in amplitude comparable to the speaking period of the normal speakers. When the stutterer is speaking freely, in

[3] West, Robert, "Is Stuttering Abnormal?" *Journal of Abnormal and Social Psychology*, 31; no. 1: April-June 1936. 76–86.

[4] Travis, L. E., "A Comparative Study of the Performance of Stutterers and Normal Speakers in Mirror Tracing." *Psychological Monographs*: 39; no. 2: 45–50. 1928.

[5] Travis, L. E. and Fagan, L. B., "Studies in Stuttering." III. "A Study of Certain Reflexes during Stuttering." *Archives of Neurology and Psychiatry*, 19, 1006–1013. June 1928.

[6] Orton, S. T. and Travis, L. E., "Studies in Stuttering." IV. "Studies of Action Currents in Stutterers." *Archives of Neurology and Psychiatry*, 21, 61–68. January 1929.

[7] Orton, S. T. and Travis, L. E., *op. cit.*, p. 8.

contrast to the period of free speech of normal speakers, the amplitude of the two reflexes is less than during silent periods. The variations in resistance offered by the pendant hand to an unexpected blow are directly comparable to these reflex variations." [8] (3) "In general, these investigations point to the conclusion that in the stutterer, central nervous system organization is characterized by a high degree of ambilaterality, in contrast to the relatively high degree of unilaterality which characterizes central nervous system organization in the normal speaker." [9]

Fossler,[10] Travis,[11] Trumper,[12] and Twitmyer [13] agree that the stutterers exhibit a dysintegration of certain of the motor speech units involved in breathing.

Observations relating to the endocrine physiology of the stutterer were made by Gordon,[14] Browning,[15] and West.[16] Gordon found that stuttering had been initiated in four patients to whom large dosages of thyroxin were administered. Browning's observation of children with delayed thymic involution prompted him to link stuttering with this abnormality. On the basis of the high sex ratio and distribution curve established by the White House Conference survey of speech defects, West observes: "The fact that it (dysphemia) disappears, or tends to do so, when a major endocrine metamorphosis takes place, leads one to suspect that the cause of stuttering may in part involve the ductless glands." [17]

[8] Travis, L. E. and Fagan, L. B., *op. cit.*, p. 8.

[9] Travis, L. E. and Johnson, W., "Stuttering and the Concept of Handedness." *Psychological Review,* 41, 555. November 1934.

[10] Fossler, H. R., "Disturbances in Breathing during Stuttering." *Psychological Review Monograph Supplements,* 40, 1930.

[11] Travis, L. E., Studies in Stuttering. I. "Dysintegration of the Breathing Movements during Stuttering." *Archives of Neurology and Psychiatry,* 18, 998–1014. December 1927.

[12] Trumper, M., *Hemato-Respiratory Study of 101 Consecutive Cases of Stammering.,* Doctoral dissertation, University of Penn., 1929.

[13] Twitmyer, E. B., "Stammering in Relation to Hemo-Respiratory Factors." *Quarterly Journal of Speech,* 16, 1930, p. 278.

[14] Gordon, M. B., "Stammering Produced by Thyroid Medication." *American Journal of Medical Science*: 175: 1926, p. 362.

[15] Browning, William, *The Etiology of Stammering and Methods for Its Treatment,* Vol. I; no. 4. A. T. Huntington, Brooklyn. 1915.

[16] West, Robert, "Disorders of Speech, Reading and Writing." *op. cit.,* p. 24.

[17] West, Robert, *op. cit.,* p. 24.

The most exhaustive research in the biochemistry of stuttering was made by Kopp [18] at the University of Wisconsin. The results of his study of the metabolism of stutterers indicate that the biochemical imbalance is a qualitative rather than a quantitative shift. Biochemical substances are present in normal quantities in stutterers but the relative balance between the substances is not maintained. Total serum calcium and total protein in normals is in a direct ratio; in stutterers they are related inversely. Total serum calcium and inorganic phosphates normally appear in a negative correlation; in the stutterer, they are positively correlated. In normals when potassium is increased, total protein decreases; in the stutterer, they increase together. Although the study points strongly to a disturbed metabolism in the stutterer, Kopp recognizes that the full significance of his research can be interpreted only when the metabolic changes which take place in producing and maintaining stuttering have been established.

Kopp's findings did not confirm the research of Stratton [19] who reported that "times of excitement are accompanied by less creatinine and more stammering; . . . the more nearly the creatinine coefficient approaches the normal and maintains it, the better the speech performance."

Starr [20] studied the hydrogen ion concentration of mixed saliva and concluded that the pH of the saliva of stutterers was low. His induction that the pH of the blood, therefore, must also be atypical appears to be a *non sequitur,* a fallacy which Kopp points out in his discussion.

Twitmyer,[21] Trumper,[22] and Starr [23] have linked the asynergy of stuttering with a disturbance in the hemato-respiratory balance. Trumper in a study of 101 stutterers found a correlation between the type of breathing and the erythrocyte count and hemoglobin content. The high alveolar CO_2 determinations of stutterers, Starr maintains, show a disturbance of the pH of the blood and hence of the respira-

[18] Kopp, George, "Metabolic Studies of Stutterers." *Speech Monographs,* 1, No. 1, September 1934.

[19] Stratton, L. D., "A Factor in the Etiology of the Breathing of a Sub-Breathing Stammerer," *Journal of Comparative Psychology,* 4, 1924, p. 325.

[20] Starr, H. E., "The Hydrogen-ion Concentration of the Mixed Saliva," *American Journal of Psychology,* 33, 1922, p. 394.

[21] Twitmyer, E. G., *op. cit.,* p. 278.

[22] Trumper, M., *op. cit.*

[23] Starr, H. E., *op. cit.* p. 394.

tory center. An arrythmia between breathing and phonation is the final result. Since a constant pH is dependent on the "buffers" of the blood, Starr's study implies an abnormal blood picture. Kopp was unable to confirm Starr's findings on a high alveolar CO_2: "The alveolar CO_2 studies show the stutterers to be little different from the normals." [24]

Dr. Elizabeth McDowell [25] included in her study: *Educational and Emotional Adjustments of Stuttering Children* the question, "Are marked physical abnormalities present more frequently among stuttering than among non-stuttering children?" Her conclusion based on the complete physical examination of 38 children and compared with a control group of non-stutterers is that "in physical traits marked similarity of the two groups was evident." Dr. McDowell's examination embraced nutrition-weight, heart rate and general condition, irregularities of heart, general physical condition, lung capacity, strength of grip, and vision. No generalization is made, however, because of the limited number in the group.

Although these researches are vital to any study of the etiology of stuttering, with the exception of the investigation by McDowell, they border only tangentially on the project at hand.

The medical records of stuttering children were obtained from four Chicago Hospitals: Bobs Roberts and Billings Hospital, Children's Memorial Hospital, The Rush Medical Clinic (Central Free Dispensary) and Michael Reese Hospital. If the child had been referred by another hospital or if the social service exchange indicated that the patient had been entered previously at other hospitals in the city, an effort was made to secure the earlier record. In approximately one-fourth of the cases the records of two hospitals or clinics have been secured. When the record indicated that a social or research agency had referred the case, contact was made with this agency, and the record of the agency was abstracted. The records of the Illinois Institute for Juvenile Research, the Jewish Social Service Bureau, the Jewish Home Finding Society, the Psychopathic Laboratory, the Juvenile Court, the Illinois Children's Home and Aid Society, and

[24] Kopp, George, *The Metabolism of the Stutterer as evidenced by biochemical studies of blood, alveolar air, and urine.* Doctoral dissertation, University of Wisconsin, p. 162, 1933.

[25] McDowell, Elizabeth, *Educational and Emotional Adjustments of Stuttering Children,* Bureau of Publications, Teachers College, Columbia University Contributions to Education, No. 314. 1928.

the Elizabeth McCormick Fund particularly were helpful in supplying supplementary data. Although considerable care was exercised, forty records were disqualified in the evaluation of this portion of the data because they were not sufficiently complete to present an accurate medical history.

In order to make accurate comparisons it was necessary to secure a control group of 500 non-stuttering children who likewise had complete clinical records, but who were entered in the clinics for general pediatric care or preventive medicine. These records were secured from four agencies which carry on a program of routine medial care of their cases. The Jewish Home Finding Society, The Elizabeth McCormick Fund, the Chicago Orphans Asylum and the Illinois Children's Home and Aid Society provided these records. The bases of selection were the same as those which obtained in the stuttering group: 1) a medical record beginning with infancy or very early childhood, and 2) a record extending to 9–10 years of age.

II. Findings

In studying the medical records of the two groups, control and stuttering, an effort was made to insure a true basis for comparison. Medical records that appeared incomplete were discarded from both groups. From the 500 records for each division, case histories of 430 stutterers and of 462 children in the control group were judged fairly adequate. One recognizes, however, a source of error in any plan which depends upon the reliability of the recorder and on the memory of the parent of the patient. The latter factor we have attempted to nullify as far as possible by selecting children who first entered the clinic in infancy or in early childhood. The error from the first factor we have reduced by securing records written by different physicians, and, in many instances, by staff members from different hospitals.

A tabulation was made of all the diseases suffered by the stutterer prior to the onset of his stuttering and this tabulation was compared with a similar record of diseases in the control group contracted up to the fifth year of life. The average age for the onset of stuttering was 4.86 years; hence this limit was imposed on the control group in all but two disease entities in order to make the comparison more nearly parallel. Endocrine disorders and rheumatic fever typically do not appear before five years; therefore, the age limit in these disorders was extended to nine years, the extreme age

for the onset of stuttering in our group. The detailed tabulation of all diseases reported by both groups is not included in this paper. Table I presents those disorders in which the incidence was approximately two times more frequent in the stuttering than in the control group.

TABLE I

COMPARATIVE MEDICAL HISTORY

(Diseases selected for critical comparison in which the incidence is approximately 100% greater in stuttering than in control group)

DISEASE[1]	STUTTERERS (430)				CONTROLS (462)				
	No.	% OF TOTAL GROUP	P. E.	SEV.[3]	No.	%	P. E.	SEV.	C.R.[2]
I. Specific infectious diseases									
Frequent acute respiratory infection with high fever (104°)	27	6.28	1.079	27	15	2.81	1.198	13	2.89
Rheumatic fever	7	1.63	.413	3	3	.65	.252	1	1.09
Scarlet fever	36	8.37	.888	18	20	4.32	.639	4	3.70
II. Diseases of lymphatic system									
Acute cervical adenitis with abscess	19	4.42	.668	19	2	.43	.203	2	5.70
III. Diseases of nervous system									
Encephalitis	17	3.95	.634		2	.43	.203		5.29
Epilepsy	12	2.79	.524		1	.22	.145		4.72
Convulsions	24	5.56	.747		11	2.38	.478		3.58
IV. Diseases of mouth, pharynx, tonsils, and palate									
Frequent, severe tonsillitis	70	16.28	1.201	70	27	5.84	.736	27	7.41
V. Diseases of trachea and bronchi									
Acute, frequent bronchitis	67	15.28	1.134	67	39	6.26	.882	38	5.03

[1] The diseases in all tables have been grouped according to the classification employed by the Massachusetts General Hospital, Eighth edition, Boston, 1931.

[2] Critical Ratio: $\frac{D}{P.E._{diff.}}$

[3] Sev.: Extreme severity; plus 3.

Since there is possibility of error in Table I in which we have used the average age for the onset of stuttering as the age limit for the control group, a tabulation is presented of the diseases from which

each group suffered most frequently up to and including nine years of age. (Nine years was the extreme age for the onset of stuttering in our group.)

TABLE II

COMPARATIVE MEDICAL HISTORY
(Diseases of greatest frequency, infancy to nine years)

DISEASE	STUTTERERS (430)		CONTROLS (462)	
	No.	% OF TOTAL GROUP	No.	% OF TOTAL GROUP
I. Specific infectious diseases				
Frequent, acute respiratory infections with high fever	42	9.77	26	4.35
Rheumatic fever	13	3.02	3	0.65
Scarlet fever	55	12.79	40	8.66
II. Diseases of lymphatic system				
Acute, cervical adenitis with abscess	24	5.58	7	1.52
III. Diseases of nervous system				
Encephalitis	17	3.95	5	1.08
Epilepsy	13	3.02	3	0.65
Convulsions	25	5.81	15	3.25
IV. Diseases of mouth, pharynx, tonsils, and palate				
Frequent, severe tonsillitis	90	20.93	41	8.87
V. Diseases of trachea and bronchi				
Acute, frequent bronchitis	69	16.05	42	9.09

In order to determine the diseases suffered equally by the two groups, or more frequently by the control group, Table III was prepared.

TABLE III

COMPARATIVE MEDICAL HISTORY

(Diseases in which the incidence approaches parity, or in which the incidence is greater in the control group)

DISEASE	STUTTERERS (430)			CONTROLS (462)		
	No.	%	SEVERITY PLUS 3	No.	%	SEVERITY PLUS 3
I. Specific infectious diseases						
Chicken pox	89	20.7	5	68	14.7	
Measles	152	33.4	9	144	31.1	3
hemorrhagic	3					
II. Diseases peculiar to infancy						
Malnutrition	97	22.6		151	32.7	
Rickets	96	22.3		126	27.3	
III. Diseases of the eye and ear						
Otitis media	60	9.3	10	64	13.9	14
acute	31			40		
chronic, suppurative	20			14		
IV. Diseases of the intestines						
Indigestion, intestinal	14	3.3		22	4.8	
V. Allergy						
Eczema	14	3.3		10	3.6	
Dermatitis	10	2.3		6	1.7	

Because stuttering is ascribed frequently by parents to the nervous shock resulting from a severe illness or operation, the case histories again were reviewed. In Table IV are listed those cases in which stuttering was the immediate sequela of a specific illness or operation. Only in the event that stuttering began during early convalescence from the disease was it included in the table.

TABLE IV

ONSET OF STUTTERING FOLLOWING IMMEDIATELY UPON A SPECIFIC ILLNESS OR OPERATION

Total number in study: 430 stutterers
Number reporting correlation: 80 stutterers

	NO.
I. Specific infectious diseases	35
Bronchopneumonia: 4	
with small pox: 1	
with diphtheria: 1	
Diphtheria: 4	
with interruption of speech development: 1	
Measles: 1	
with high fever: 1	
Glandular fever: 1	
Acute, respiratory 3 infection with high fever:	
Lobar pneumonia: 4	
Rheumatic fever: 3	
acute, within one month	
Scarlet fever: 10	
with pneumonia: 1	
Whooping cough: 6	
with high fever and strabismus: 1	
II. Diseases of the lymphatic system	2
Cervical adenitis with abscess with complete aphonia: 1	
III. Diseases of the nervous system	18
Convulsions: 6	
within one month	
with complete aphonia: 1	
Chorea, Sydenham's: 1	
Epilepsy: 6	
petit mal: 4	
grand mal: 2	
IV. Diseases of the mouth, lips, cheeks, pharynx, tonsils and palate	4
Pharyngitis, acute, with high fever: 2	
Tonsillitis, acute, with high fever: 2	
V. Diseases of the trachea and bronchi	6
Bronchitis, acute: 6	
with high fever: 2	
with interruption of speech development: 1	
VI. Allergy	3
Bronchial asthma: 3	
VII. Tonsillectomy and Adenoidectomy (within one week)	12
with encephalitis, lethargic: 2	
with pneumonia (and strabismus): 3	
with complete aphonia: 2	

III. Discussion

Tables I and II. It will be recalled that Table II, listing the most frequent diseases from infancy to nine years, was set up as a check on Table I in which the histories were only carried through the fifth year. The results recorded in Table II, however, parallel so closely the earlier tabulation in Table I that it seems safe to assume that we have obtained a fair picture of the disease incidence in the two groups, stuttering and control. A cursory glance at the material in Tables I and II reveals that specific infectious diseases of the respiratory tract and certain diseases of the nervous system are most immediately and most frequently associated with the onset of stuttering. The large critical ratios in each comparison indicate that a true difference greater than zero exists.

In considering the acute respiratory infections accompanied by high fever, one is impressed not by the relative size of the two groups but by the comparatively large number of stutterers in whom the illness takes a severe course and is accompanied by a high temperature. (The term, "high temperature," has been interpreted as a temperature of 104° F. or higher.)

The total number suffering from acute rheumatic fever is small, but when one considers the low incidence of this disease in the general population, its incidence among stutterers seems worthy of note. Hench and colleagues [26] in a most comprehensive survey of British and American literature on the problem of rheumatism and arthritis, state "Of 32,753 medical admissions to a hospital for private patients 0.34% (114) had rheumatic fever . . . Of 10,800 medical admissions to a hospital for charity patients, 1.01% (110) had rheumatic fever." Since approximately half of our records is drawn from private hospitals, the figure for comparison might be considered to be the mean of these two extremes or .625%. Although this furnishes only a rough basis for comparison, it does indicate that the number of stutterers who have had rheumatic fever is unusually large. In view of the established high sex ratio in stuttering, a statement on the sex ratio in rheumatic fever is of interest. Hench and colleagues [27] make this observation: "Among children, rheumatic fever presumably af-

[26] Hench, P. C., Bauer, W., Fletcher, A. A., Christ, D., Hall, F., and White, T. F., "The Problem of Rheumatism and Arthritis," *Review of American and English Literature for 1935.* Annals of Internal Medicine: 10: p. 785.

[27] Hench, F. S., Bauer, W., et. al., *op. cit.*, p. 287.

fects girls more often than boys in a ratio of 6:4. Gilkey's patients [28] with rheumatic carditis included 275 girls, 183 boys. There were 142 females (62%), 85 males (38%) in the series of Brenner [29] who found that up to the age of 20 the incidence in males about equaled that in females. The preponderance of affected females begins only after the age of 20 years. Rheumatic carditis is thus less common but more severe in males and gives rise to symptoms earlier."

Approximately twice as many stutterers as controls included scarlet fever in their case histories. Although all the recorders did not designate the degree of severity of the illness, a sufficient number reported in both instances to make it probable that the virulence of the disease among the stutterers was greater than among the control group. Eighteen stutterers had very severe cases; four in the control group were designated as very severe.

Although anterior cervical adenopathy might be interpreted as a symptom rather than a disease entity, markedly enlarged (plus 3) cervical glands should merit consideration as an index of general health. 11.9% of the stutterers, in contrast to 1.3% in the control group were so afflicted at one time in their early childhood. In Hardy and Hoefer's study [30] of 409 normal children, 1.0% showed markedly enlarged cervical glands. Added weight is given our observation when one includes the comparatively large number of stutterers, 4.418%, who suffered from acute cervical adenitis with abscess. The large critical ratio of 5.705 makes it probable that this is more than a coincidental relationship.

The stuttering children were afflicted far more frequently than the control group with severe tonsillitis and repeated attacks of acute bronchitis. The stutterers so afflicted also suffered more severely from the disease. Apparently, no figures are available on the morbidity rate in the general population. The sex ratio also is in doubt. Dr. James Trask [31] refers to the investigation of McNeil and colleagues who found a predominance of males in all varieties of bronchitis and

[28] Gilkey, H. H., "Heart Disease in Children," *Journal of Missouri State Medical Association*: 32: 1935, 356–61.

[29] Brenner, C., "Observations on Acute Rheumatism and Rheumatic Heart Disease," *Birmingham Medical Review*, 9: 1934, 193–224.

[30] Hardy, M. C. and Hoefer, C. N., "Healthy Growth." University of Chicago Press, 1936, p. 39.

[31] Trask, James, "Pneumonia and Bronchitis," *Practice of Pediatrics*, Vol. II, ch. 48. W. F. Prior and Co., Hagerstown, 1937, p. 9.

pneumonia except in bronchiectasis. The mortality rate also showed a predominance of males.

The diseases of the nervous system with comparatively high incidence among stutterers are three: Encephalitis, convulsions, and epilepsy. Convulsions may be questioned as a disease *sui generis*. The disorder does indicate, however, the presence of an unstable nervous system, and therefore may be valuable in a comparison with stuttering. Three questionable diagnoses are not included in the total because the evidence was weighted strongly in favor of a final diagnosis of epilepsy, petit mal. Convulsions were twice as prevalent among the stutterers; epilepsy was found 10 times more frequently among the stutterers than among the controls. It is interesting to note that McQuarrie [32] estimates that .58% of the total population suffers from epilepsy. On this basis, epilepsy is seven times more frequent in stutterers than in the general population. The sex ratio, McQuarrie [33] does not consider to be important but he comments: "It is notable, however, that the number of males with epilepsy definitely exceeds the number of females after the tenth year. Lennox and Cobb raise the question as to the probability of the difference being due to the more frequent occurrence of trauma to the head among males."

Table III. If any significance can be attached to this table, it lies in its negative evidence. At various times, disturbed vitamin-D metabolism has been raised as a causative factor in factor. Our findings on malnutrition and rickets would contra-indicate this assumption. There is some indication that stutterers as a group are not highly susceptible to these disorders in nutrition.

Table IV. Eighty stutterers reported a close association between the inception of stuttering and a specific illness. It will be recalled that the diseases with a comparatively high incidence in stutterers were: acute respiratory infections accompanied by high temperature, acute cervical adenitis, acute bronchitis, encephalitis, scarlet fever, convulsions, and epilepsy. In Table IV it will be noted that scarlet fever, convulsions, and epilepsy, encephalitis, acute bronchitis, and whooping cough are associated most frequently (five or more times) with the immediate onset of stuttering. The diseases with highest frequency are the same in both tables with two exceptions. Whooping cough is included only in Table IV; acute cervical adenitis only in Table I. In other words, scarlet fever, convulsions, epilepsy, encephal-

[32] McQuarrie, I., Epilepsy. *Practice of Pediatrics*, Vol. IV, ch. 12, p. 4.
[33] McQuarrie, I., *ibid.*, p. 3.

itis, and acute bronchitis have a high frequency in both tables. There are two additional associations that should be noted. In twelve cases stuttering began within one week after a tonsillectomy and adenoidectomy. In six of the twelve cases there were other disorders immediately following the operation. Eight children began to stutter after a period of aphonia. In two instances, aphonia accompanied a specific disease. The loss of voice lasted from two days to one week but stuttering ensued immediately upon regaining vocal power.

The question which stems most directly from the tabular report is this: Is there a common denominator in these disorders? Are severe respiratory infections, rheumatic fever, scarlet fever, cervical adenitis, severe tonsillitis, and bronchitis linked in any way? The common factor in the infectious diseases which presents itself most clearly is the "rheumatic diathesis." In other words, a constitutional predisposition in individuals has been demonstrated in all these disorders. In rheumatic fever, Findlay [34] obtained a family history in 35% of his cases, Coombs [35] in practically half of his cases. Dr. Stanley Gibson [36] who discusses the findings of Findlay and Coombs concludes: "That there seems to be a family predisposition in some cases is readily shown. It is not rare to find two or more children in the same family with one or more of the rheumatic manifestations, and it is still more frequent to secure a story of rheumatism affecting parents, grandparents, aunts, or uncles." Hench and colleagues [37] make this statement: "Rheumatic fever is a familial disease. Whereas Shapiro [38] found it only in 15% of the families of non-rheumatic children, he found it in 47% of families of his rheumatic children, often several members of a family having been affected. Among 458 children with rheumatic carditis seen by Gilkey,[39] in the families of 105 children there were two cases, in the families of 20 children three cases, and in the families of 10 children four cases of rheu-

[34] Findlay, L., *The Rheumatic Infection in Childhood,* Wm. Wood and Co., New York, 1932, p. 301.

[35] Coombs, C. R., *Rheumatic Heart Disease,* Wm. Wood and Co. New York, 1924, p. 187.

[36] Gibson, Stanley, "Rheumatism and Chorea," *Practice of Pediatrics.* Vol. II, ch. 19. W. F. Prior and Co., Hagerstown, 1937, p. 3.

[37] Hench, Philip S., et. al., *op. cit.,* p. 786.

[38] Shapiro, H. J. and Shapiro, G. E., "Clinical Studies in Juvenile Rheumatism," *Minnesota Medicine,* 1, 1935, 840–52.

[39] Gilkey, H. M., "Heart Disease in Children," *op. cit.,* 356–61.

matic disease. Preston [40] found a familial incidence in 45% of his cases of acute rheumatism with carditis. In his 200 cases Wilkinson [41] found a familial incidence of nearly 70%."

The close relationship among respiratory infections, tonsillar infections, and rheumatic fever, Hence and colleagues [42] also recognize: "Exacerbations (rheumatic fever) are so frequently precipitated by respiratory infections that some regard the latter not as non-specific precipitating factors but as an integral part (indeed the specific beginning) of either the first or subsequent attacks . . . The frequency with which tonsillar or upper respiratory infection occurs as a precursor of rheumatic fever has again been demonstrated by Coburn and Pauli, Gilkey and McIntosh and Wood . . . In Bland and Jones' series of over 1200 rheumatic children and adolescents, respiratory infections were experienced by 75% of those with recurrences."

Scarlet fever, too, may have its roots in heredity for "family resistance has been described." [43] Whether the inheritance resides in an inability of the body to build up resistance or in a specific gene providing favorable soil for streptococci is not known.

In diseases of the pharynx and bronchi, writers likewise recognize a constitutional factor. It well may be an heritable factor which, in the case of the pharynx, favors changes in the lymphoid elements of the pharyngeal mucosa.[44] Bronchitis as a disease, *per se,* may not be inherited, write Schick and Peshkin, but the soil, "the physio-chemic makeup" or tendency to develop bronchitis may be inherited.[45]

Granted, then, that these disorders of the respiratory system may have a common constitutional predisposition, how may the nervous disorders be brought into the framework? Is there any link between these diseases and the nervous illnesses which appear frequently in the history of stutterers? Although the two groups seem very far apart, there may be a common alliance in the fact that nervous disorders are accepted sequelae of illnesses included in the rheumatic

[40] Preston, T. W., "Some Observations on Rheumatism in Children," *British Journal of Children's Diseases,* 32, 1935, 1–21.

[41] Wilkinson, E. D., "Rheumatism and its Results," *Lancet,* 2, 1935, 411–17.

[42] Hench, P. S., et al., *op. cit.,* p. 793.

[43] Toomey, John, "Scarlet Fever," *Practice of Pediatrics.* Vol. II; ch. 23; W. F. Prior and Co., 1937, p. 2.

[44] Livingston, G. S., "Diseases of the Pharynx," *Practice of Pediatrics.* Vol. II; ch. 42. *ibid.,* p. 8.

[45] Schick, Bela and Peshkin, M. M., "Bronchial Asthma," *Practice of Pediatrics.* Vol. II; ch. 57. ibid., p. 7.

diathesis. In discussing bronchitis and pneumonia, Dr. James Trask says: "Cerebral symptoms are common . . . Convulsions occurred in something more than 10% of the cases." [46] Pertussis may have many cerebral complications. Dr. John Sauer [47] refers to the work of Husler and Spatz (1924) who "found profound neurobiotic changes in the brain substance, beside the changes described by Neurath . . . These changes are probably the result of toxic action but are not specific for pertussis." On the cerebral complications of whooping cough, Abt [48] writes: "The convulsive stage of pertussis with all its specific respiratory and cerebral symptoms is, therefore, to be considered as an expression of the injurious effect of the pertussis endotoxins on the respiratory organs and the lymphatic and nervous systems. The degree and extent of this injury . . . depend on the severity of the intoxication and the susceptibility of the corresponding tissues to the organism . . . Whooping cough eclampsia as such plays an important part, and it is probably due to the action of the toxins on the regulatory centers of the cerebral vessels, which, in turn, results in a functional disturbance of the circulation in the form of angiospasm. Depending on the degree of toxic impairment and the subsequent circulatory disturbance, there develop reparable or irreversible tissue changes."

It should be noted that a familial tendency generally is recognized in convulsions and epilepsy, the two nervous disorders with the highest incidence among stutterers. On the heritable factor in epilepsy, McQuarrie [49] reports the research of others: "Gowers, after a prolonged study of the question concluded that 'there are few diseases in the production of which inheritance has greater influence.' Shanahan, Burr, Thom, and Myerson although disagreeing that direct heredity has been proved to be important agree that 'there is evidence of inheritance of an unstable nervous system.' "

McQuarrie's [50] description of the nervous pathology of epilepsy well may be the postulated end-result for all the disorders we have

[46] Trask, James, "Pneumonia and Bronchitis," *Practice of Pediatrics.* Vol. II; ch. 48. *ibid.*, p. 9.

[47] Sauer, L. W., "Whooping Cough," *Practice of Pediatrics,* Vol. II; ch. 34. *Ibid.*, p. 7.

[48] Abt, Isaac, *Yearbook of Pediatrics,* W. B. Saunders Co., Philadelphia, 1935, 155–56.

[49] McQuarrie, I., "Epilepsy," *Practice of Pediatrics.* Vol. IV; ch. 12. Brenneman, Joseph, ed. W. F. Prior and Co., Hagerstown. 1937, p. 9.

[50] McQuarrie, I., "Epilepsy," *op. cit.*, p. 11.

discussed: "Irritability and activity of nerve cells is governed by aqueous solutions of various electrolytes. Any disturbance in the ionic balance in the direction favoring increased irritability (decrease in Ca, Mg, and H or relative increase in Na and H) might be expected to precipitate seizures . . . Epilepsy may be traced to an increase in cell membrane permeability . . . Fright or emotional crises, by involving autonomic and sympathetic systems in turn may affect cerebral circulation unfavorably or may increase brain cell permeability."

Although the problem still is *sub judice* the final interpretation of these infectious diseases and of nervous disorders some day may be stated in terms of a demonstrable impairment of nerve cells or, in the phraseology of Schick and Peshkin,[51] of a "physio-chemic disturbance in equilibrium which probably manifests itself through the nervous system."

Two hypotheses for the apparent association of certain diseases with stuttering may be suggested. From one position one may argue that the diseases most frequently associated with the onset of stuttering are not true precursors. They may only serve, through the development of a high fever, to impair further the already defective armamentarium of speech. Earlier in this study, mention was made of the specific toxic action of these respiratory diseases on neural tissue. The toxins, attacking the weaker cells first, may tear down the narrow margin of safety and so "trip off" stuttering. It is conceded in this argument that the centers and tracts forming the speech pattern were weak before any disease attacked them. This statement is in accordance with our finding that stutterers are delayed in beginning to talk and in developing intelligible speech.[52] Endowed by inheritance with an inferior speech mechanism, the potential stutterer may "ride the waves" successfully until a temporary infectious or nervous disorder engulfs him. The illness may be of short duration but the damage may be sufficient to precipitate stuttering. Even in this argument inheritance has not been eliminated for its crux rests on the presence of an inferior neural endowment in speech patterns.

The other position on disease and stuttering which one might hold relies solely on a genic constitution. For the diseases most frequently associated with stuttering, there has been demonstrated in

[51] Schick, Bela and Peshkin, M. N., *op. cit.* p. 8.

[52] Berry, Mildred F., "The Developmental History of Stuttering Children," *The Journal of Pediatrics,* Vo. 12. No. 2. February, 1938, 209–17.

some individuals a constitutional predisposition. It is assumed that stuttering likewise may arise from a defect in the germ plasm. Is it possible that boty types of disorders may reside in the same deleterious gene? Or, to state it in another way: Is it possible that the resisting gene for both disorders is absent in the stutterer? The answer awaits further investigation.

Other important factors which must be taken into account before the etiology of stuttering is established are 1) the high sex ratio in stuttering, 2) the high incidence of twinning in stuttering families, 3) the high incidence of sinistrality or of ambilaterality in stuttering families. These factors are reported on elsewhere by the author.[53, 54]

I close this paper as I began it, with a reiteration that no far-flung generalizations can be made, for these are meager beginnings. Before this question of the relation between disease and stuttering can be answered a large group of children with a stuttering heritage should be enlisted in a long term program of routine pediatric care, extending from infancy to puberty. The medical records of these children when compared with a control group of non-stuttering children handled in the same way should afford most valuable information. Through such projects one certainly will avoid the pitfall of "owing to the facts what is saved on theory." Stuttering then may be nearer a solution.

IV. Conclusions

1. The history of acute infectious diseases attacking principally the respiratory system is found more frequently in the records of stuttering than of non-stuttering children. Recognized sequelae of this group of diseases are nervous disorders. The relative incidence was determined by a tabulation of the diseases incurred prior to the average age, 4.86 years, and to the extreme age, 9 years, for the onset of stuttering.

2. The history of certain diseases of the nervous system: encephalitis, convulsions, and epilepsy, occurs more frequently in the records of the stuttering than of the non-stuttering children.

3. The diseases most frequently and most immediately associated with the inception of stuttering are specific infectious diseases of the respiratory tract and diseases of the nervous system.

[53] Berry, Mildred F., "Twinning in Stuttering Families: A Study in Inheritance," *Human Biology,* Vol. 9(3): Nov. 1937, 329–46.

[54] Berry, Mildred F., "A Common Denominator in Twinning and Stuttering," *Jour. of Speech Disorders.* Vo. 3; No. 1. March 1938, 51–57.

THE AUDITORY MEMORY SPAN FOR SPEECH SOUNDS

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IT IS only within the past eight or ten years that the attention of speech teachers and therapists has been seriously directed towards one of the factors now believed to be important in conditioning the quantitative and qualitative development of speech in the individual, namely, the auditory memory span. In 1932 Robbins called the attention of speech therapists to the probable role of memory span in language learning and development.[1] He reported the results of an investigation in which it was discovered that of a group of 40 dyslalia cases, 45% were retarded in memory span, using the age norms and the technique of the digit span tests of the Stanford Revision of the Binet Intelligence Scale. Of a group of clutterers, 53% were retarded, and of a group of delayed speech subjects, 60% were retarded. More recently West has expressed the opinion that "The memory span is probably one of the most important factors in determining the time of onset of speech and its rate of maturation." [2]

In order to understand this relationship, some concept of the nature and function of the ability itself must be set up. Memory span can be simply defined as the longest series of digits, syllables, or other relatively discrete material which the individual can repeat without error immediately after it has been presented to him. Jacobs, who is credited as being the first investigator to develop the test of memory span, or "prehension" as he called it, and to attempt an explanation of the mental processes which it involved, states, "It may be described as the mind's power of taking on certain material; in this case, auditory sensations. Now this power of taking on need not necessarily go with that of taking in, but, on the other hand, we clearly cannot take in without first taking on, and the mental operation we have been testing thus seems a necessary preliminary

[1] Robbins, S. D., "The Relation Between the Short Auditory Memory Span Disability and Disorders of Speech," Formal Papers presented at the Seventh Annual Convention of the American Speech Correction Association, 1932, Robert West, Editor.

[2] West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech.* Harpers and Brothers, New York, 1937, p. 108.

to all obtaining of mental material. Thus we might expect that the span of prehension should be an important factor in determining mental grasp, and its determination one of the tests of mental capacity." [3]

Meumann [4] speaks of the importance of memory span in learning, or in any situation involving language. He believes that dull pupils often fail to answer questions because they cannot keep all of the words in mind long enough to understand what is wanted; they cannot extend their grasp sufficiently to encompass the entire phrase or sentence in one mental process, as it were. For this reason he holds that immediate memory, or memory span, is of primary importance in school work, in all auditory instructions, dictation, mental arithmetic, and similar processes.

Since speech is largely an imitative process and is almost wholly auditory in the early stages of its ontogenesis it becomes evident that the process is heavily dependent upon the child's ability to retain and associate sounds; in other words, his auditory memory span. This is, of course, assuming that his hearing and speech mechanisms are intact. Not only will memory span affect his learning to understand language, but his ability to use it as well, since, in order to reproduce a word of three or four sounds, the child must first be able to retain and associate together in their proper time order that number of auditory perceptions.

Statement of the Problem

The present investigation, however, was not primarily concerned with the relation of memory span to the development of speech. Rather, its chief purpose was to determine and set up a technique whereby this relationship could be studied. If speech is indeed heavily dependent upon *auditory* memory span, as an important factor in its development, and if it is desirable to learn more of the characteristics of auditory memory, then it becomes necessary to develop a test that will successfully isolate the auditory sense department and appeal solely to it, so far as that is possible. The failure of previous memory span tests in this respect will become more evident if certain aspects of their development and methodology are reviewed briefly.

[3] Jacobs, Joseph, "Experiments on Prehension," *Mind*, 12 (1887), 75–79.

[4] Meumann, E., *The Psychology of Learning*, Trans. by John W. Baird. D. Appleton and Co., New York, 1913.

Memory span has been a fruitful subject for experimentation and testing in the field of psychology ever since Jacobs first developed the test in 1886.[5] He read lists of numbers, letters (which were apparently named, not sounded), and nonsense syllables to a group of London school children ranging in age from eight to twenty years. He read in a monotone without rhythm or accent at the rate of one presentation every half second. Reproduction was immediate and was of two forms, oral and written. He presented two series of each length and took the longest series correctly reproduced at least once out of the two trials as the span. He found the span to increase rather steadily with age within the range of ages represented in this group. He also discovered a "tolerably constant ratio" among the scores for the three types of materials used, the scores for syllables being lowest, letters next, and digits highest.

A large number of important memory span investigations have been undertaken since Jacobs first conducted his experiments. Although many different types of materials and a wide variety of methods of administering and scoring the tests have been used by these investigators, most of the studies substantiate the following generalizations:

1. Memory span is a function of growth and development. A definite positive relationship has been found between memory span scores and chronological age, up to the age of approximately 15 at least.

2. The same type of relationship, though not so close, has been discovered between memory span and intelligence. That is, while actual correlations between memory span scores and intelligence measures have been low, virtually all studies have revealed that those of superior intelligence have memory spans on the average definitely above those of inferior intelligence.

Very much the same relationship appears to exist between memory span and ability in school work as indicated by school grades.

3. For adults the memory span for material presented visually has been found to be generally superior to the span for material presented auditorially. The opposite situation has been observed in the case of young children.

4. No statistically important sex differences have been observed, although many studies report slight differences almost always in favor of the female.

5. Memory span for connected, logical material, such as syllables in a sentence, is substantially greater than the span for discrete material, such as nonsense syllables.

As was stated previously, a wide variety of materials have been employed. Whipple[6] lists a total of twelve different types which

[5] Jacobs. *op. cit.*, 75–79.

[6] Whipple, G. M., *Manual of Mental and Physical Tests,* Part II, Complex Processes. (Warwick and York, Baltimore. 1915.)

investigators have used from time to time, including digits, concrete and abstract nouns, nonsense syllables, pictures, geometrical drawings, letters, and musical tones. Of these, however, digits have proved to be by far the most popular, possibly because of the facility with which they may be used. It is the digit span test that is used in the Stanford Revision of the Binet Intelligence Scale.[7]

Possibly even greater originality than that found in the choice of materials to be used has been exercised in devising new methods of administering and scoring the tests. However, despite the fact that Guilford and Dallenbach [8] in a survey of methods used in the evaluation of the data of memory span tests were able to describe a total of twenty-seven techniques and procedures which have at various times been employed, a majority of workers have used some modification of the technique developed by Jacobs. One of the most common is to determine the largest number of relatively discrete units, such as digits, letters, or nonsense syllables, that an individual is able to retain and reproduce immediately after one presentation. Usually two or three different trials are given at each level of difficulty, or for each length of series, and one correct response is taken as a success at that level.

While many of the investigators have dealt with the problem of memory span in general without reference to the particular type of mental imagery employed by the subjects, a number of them have attempted to construct a test that would involve one type of mental imagery in relative isolation. The sensory faculty usually selected for study is either the visual or the auditory. It has apparently been assumed, however, that the method of presentation itself was capable of determining the kind of ideation involved in the test.[9] Hence, visual presentation has been used to determine the visual span and auditory presentation to determine the auditory span.

Careful study of this problem, however, leads to the conclusion that other factors, in addition to the method of presentation, are operative in determining the type of ideation that the subject will use. Among these factors the two most important are the nature of

[7] Terman, L. M.

[8] Guilford, J. P. and Dallenbach, K. M., "The Determination of Memory Span by the Method of Constant Stimuli," *American Journal of Psychology*, 36 (1925), 621–628.

[9] Henmon, V. A. C., "The Relation Between Mode of Presentation and Retention," *Psychol. Rev.*, 19, 1912, 79–96.

the material employed in the test and the method of reproduction. Previous experimentors often have failed to control these factors, having simply used digits, for example, with graphic reproduction for both the visual and the auditory tests. With material so readily visualized as digits, especially when reproduction is written, it appears safe to conclude that no valid claims can be made for auditory memory, even though the presentation may be oral.

If what is desired is merely a total quantitative memory span score, then there is much of value in these general studies. But if one desires to know more of the role which *auditory* imagery plays in immediate memory, then it appears reasonable to insist that an attempt be made to construct a test of materials and methodology restricted more specifically to the auditory field. Such a test should be purely auditory throughout, in technique at least, employing auditory presentation and vocal reproduction. The material used should be such that it has predominantly auditory value for the subject; it should be difficult to visualize.

The type of material most nearly satisfying those requirements is speech sounds, particularly vowels, taken from the subject's native language. When these sounds are given auditorially and are sounded, not merely named, and with oral reproduction, there is a minimum, opportunity for visual imagery to function. With respect to some of the sounds of English, for example, it can be said that there does not exist, for the individual untrained in phonetics, a visual symbol which specifically represents that sound and that sound alone.

Relative to another important aspect of memory span testing also, speech sounds appear to offer more advantages than other types of material. It has been generally agreed by students of this problem that if the obtained score is to be regarded as a reliable index of the subject's true memory span, the test must be composed of discrete elements. This means that there must be no meaningful associations readily suggested by the material itself or by its arrangement or presentation. The only associations possible in the ideal memory span test are those unavoidable, purely artificial ones arising out of associations in time or space and supplied subjectively by the subject himself.

It is doubtful, however, whether a truly discrete series can ever be attained with the use of digits for the reason that any series of digits can readily be combined by the subject into a number, which assumes a certain meaning for him simply because it is a mathematical unit, with which he is familiar and which he can readily visualize. He

remembers the series not as a group of discrete units, 7–4–9–5–3–6, for instance, but as the number 749,536, or as two numbers, which he has formed in his mind probably with the aid of visual imagery. However, such a procedure is very difficult, if not impossible for many people, when isolated speech sounds are used, vowels or consonants taken separately and sounded, not named. Such a series can have very little meaningful associational value for the average subject.

Purpose of the Investigation

The present study was undertaken with the following objectives in mind:

1. To develop a memory span test that was predominantly auditory throughout.
2. To determine the relative characteristics of vowels and consonants as suitable material for such a test.
3. To suggest a standardized procedure for administering and scoring memory span tests.
4. To obtain norms at the college level for a test of auditory memory using speech sounds for purposes of comparison with subsequent studies and with other types of memory span tests.
5. To study the relation of auditory memory span, as measured by this test, to language background and training, phonetic training, pitch and speech sound discrimination, school grades, intelligence, and any other factors and abilities suggested by this study or by the literature as having a possible bearing upon memory span.

Description of the Tests and Methodology Employed

Two tests were devised, the one employing eight English vowels and diphthongs, [i], [eɪ], [æ], [aɪ], [ɑ], [ɔ], [oʊ], and [u], and the other test consisting of the six voiceless consonants, [p], [t], [k], [ʃ], [s], and [f]. In choosing the sounds for the two tests, several critera were kept in mind. With respect to the consonants, it was decided to confine them to the voiceless sounds inasmuch as the element of voice was present in the vowels, and the addition of the vocal element to the consonant series would be in the nature of a duplication. Also, if the consonants were restricted to the voiceless group, the two extremes of the speech pitch range would be represented in the two tests, the vowels representing the lower range of frequencies, the voiceless consonants the upper range. The sound [θ] was omitted because it was felt that there was too much likelihood of its being confused with [f].

Two considerations determined the choice of the vowel sounds:

In the first place, the sounds must be easily identifiable by the subjects. This means that they must not sound too nearly alike. It was early discovered in the preliminary testing that the average subject untrained in phonetics finds it very difficult to make fine discriminations among vowel sounds pronounced in isolation. This consideration automatically excluded from the test such vowels as [ɪ], [ɛ], and [ʊ] because of the danger of their being confused with [i], [æ], and [u]. Very closely associated with the matter of sound discrimination and recognition is the problem of reproduction, since the response was to be oral. There is ample evidence that the ability to produce a sound is contingent upon the ability to perceive it. Consequently in the vowel test the sounds used must be such that the layman could without difficulty not only identify the sound with ease, but reproduce it accurately as well. Because there were not enough pure vowels available which clearly satisfied these requirements, it was necessary to add three diphthongs to the list, making the total of eight sounds. This number made possible a series of eight units without the repetition of a unit within the series.

The vowel test was composed of three groups of series, each group beginning with a series of four sounds and progressing through successively longer series up to the longest which contained ten sounds. Three trial series of three sounds each, containing all of the sounds in the test, were given prior to each testing. The consonant test was identical with the vowel test except that the series in each group began with three sounds and progressed to nine. The final arrangement of the sounds into series and the series into groups was accomplished only after considerable preliminary testing and experimentation. A number of requirements must be met in the construction of such a test. In the first place, great care must be taken to insure a regular distribution of the sounds, not only within the series and the groups, but for the entire test as well. Attention must be given to the equal use of the sounds in the various positions in the series, taking into account the well established fact that the beginning and the end of a series stand the best chances of being retained and correctly reproduced, while the units most likely to be forgotten are found near the mid-point. All sounds must find equable representation in all positions.

Another factor which must be controlled is the matter of combinations of the various units within the series. These must be constructed and arranged in such a way that they do not form meaningful associa-

tions for the subject and so that they are not too often repeated in adjacent series. With respect to the problem of meaningful combinations, it must be remembered that in the first place the tests are completely auditory as far as presentation is concerned. No visual symbols are seen by the subject or referred to by the experimentor; only sounds are used. When this is kept in mind it can be seen that certain associational values of meaningful combinations in terms of the visual symbols, or even in terms of the names of the letters themselves, tend to disappear in these tests. This is true of such consonant combinations as [p]–[s]; [k]–[p]; and [f]–[t].

A second factor operating to insure a more purely discrete series arises from the manner in which the sounds are pronounced. For instance, a number of vowel combinations, such as [u]–[i]; [u]–[eɪ]; and [i]–[u], all have meaningful value when sounded as a continuously voiced unit; that is, when the two sounds are merged together. But when each sound is sounded as a complete unit in itself followed by a short period of silence, this characteristic tends to disappear for the reason that the meaning arises from the glide effect produced by the movement of the articulatory apparatus from the first sound position to the second during continuous voicing.

In both tests each sound was pronounced as a complete unit, and as clearly and distinctly as possible. The series were read in a monotone and without rhythm or grouping, care being taken to maintain the intensity at as constant a level as possible. The subject was seated with his back to the examiner to avoid any visual stimulus from the examiner's lips or face as he pronounced the sounds. Reproduction was oral and immediate.

The vowels were sounded at the rate of one per second, the presentation being timed by a silent, freely swinging pendulum constructed of a lead sinker suspended from the table in front of the examiner by a length of fish line sufficient to provide a complete cycle every second. For the consonants the pendulum length was reduced about four cm. to give a time slightly under one second for each unit.

The tests were begun, in each instance, with the trial series of three sounds each and assurance was made that the subjects perceived each sound correctly and reproduced it accurately. After the trials were disposed of, the examiner began with the first series of the first group and proceeded through that group until it became obvious that the series length had definitely progressed beyond the subject's span.

Then the examiner proceeded to the beginning of the next group and repeated the process through the three groups. The subject was usually tried out on at least two series above his highest success in any group.

Two methods of scoring were used. One was the so-called weighted score method described by Peatman and Locke.[10] Briefly, this method consists in establishing a basal score, which is defined as that series immediately preceding the first failure. In this study the basal score was taken as the longest series correctly reproduced in all three groups prior to the first failure on any series. One-third of a point was added to this basal score for each series correctly reproduced in any group above this basal score regardless of intervening failures. This total is referred to as the weighted score.

In addition to the weighted score, a raw score was also computed by a method similar to that used for scoring the digit span tests found in the Stanford Revision of the Binet Intelligence Scale.[11] This raw score was obtained from the longest series correctly reproduced in any group prior to the first failure on a given series length in all three groups. In other words, one correct reproduction out of the three trials offered in the three groups for each length of series was counted as a success for purposes of computing the raw score. This score was used in addition to the weighted score in order that results from the speech sound tests might be more readily compared with those obtained from digit span and other types of tests, many of which have used this method of scoring.

Both tests were given individually to each subject, the vowel test being given first in each case. A total of 182 subjects were tested, composed of two groups of college students, principally undergraduates. Fifty were from Stanford University and 132 from the University of Wisconsin. The major portion of the work was done with this latter group. Thirty-three of these were members of a beginning class in Phonetics, 28 were candidates for admission to the School of Education, and the rest were taken from various Speech and French classes. Forty of the 132 were Speech majors; the remainder were drawn from a great variety of schools and departments of the University.

[10] Peatman, J. G. and Locke, N. T., "Studies in the Methodology of the Digit Span Test," *Archives of Psychol.*, May, 1934, p. 167.

[11] Terman, *op. cit.*

Results and Conclusions

(1) The span for consonants was found to be materially lower than that for vowels. The vowel test yielded a mean weighted score for the group of 4.73 and a raw score of 5.46. The mean weighted consonant score was 3.83 and the raw score was 4.66. The range of weighted scores for vowels extended from 2⅔ to 7⅓, and for consonants from 2⅓ to 6. The range of raw scores for vowels was from 3 to 8 and for consonants 3 to 7.

The distribution of weighted scores for vowels was found to be bi-modal, the mode falling at 4⅔ and at 5. This means that the average college student, to the extent that this group can be taken as representative, will attain a weighted score for vowels of either 4⅔ or 5. With respect to the raw scores for vowels, the average college student can be expected to reproduce correctly at least once out of three trials a series of six sounds almost as often as he can succeed with a series of five. In other words, a raw score of 6 must be taken as high-average performance, a score of 5 as low-average. In the case of the consonants also the weighted scores approached a bi-modal distribution. Hence, an average weighted consonant score of 4 should be expected almost as often as one of 3⅔. Again in the case of the raw consonant scores, 5 must be taken as high-average, and 4 as low-average. Consistent, though small, sex differences were found always to be in favor of the females.

All of these values are substantially below the commonly accepted norms for the digit span test, the only memory span test for which reliable norms have been established for various ages and groups. The Stanford-Binet age-norms for the average adult level is 7.0 digits; the superior adult age-norm is 8.0 digits. Most of the studies utilizing college students as subjects have yielded results equaling or surpassing these values. Gates, working with college students, found an average auditory digit span of 7.66.[12] Brotemarkle found a mean auditory digit span of 9.0 for college students.[13] Humpstone reports a mean auditory digit span of 8.5 [14] and Garrett, in a carefully con-

[12] Gates, A. I., "The Mnemonic Span for Visual and Auditory Digits," *Jour. of Exper. Psychol.*, 1, 1916, 393–403.

[13] Brotemarkle, R. A., "Some Memory Span Test Problems," *Psychol. Clinic*, 15, 1924, 229–258.

[14] Humpstone, H. J., "Memory Span Tests," *Psychol. Clinic*, 12, 1919, 196–200.

ducted study, found a mean auditory span for digits of 8.36 among college students.[15]

When these raw scores for digits are compared with raw scores for speech sounds, it is seen that the memory span for digits runs generally about 2.5 units higher than that for vowels among college students. Incidentally, in all investigations digits have yielded higher average values than any of the other discrete materials employed in memory span tests. This could be interpreted as a form of support for the criticisms brought against digits earlier in this discussion as material for an auditory memory span test, namely, their susceptibility to visualization and the meaningful associational values which a series of digits is likely to present.

(2) In both the consonant and vowel tests the weighted scores gave a more regular distribution than the raw scores, with the weighted scores for vowels approaching a normal probability curve of distribution. In both tests the raw scores gave a distribution curve that was positively skewed. The raw scores also ran consistently higher than the weighted scores. Since the weighted score represents the subject's average performance on all three groups of series which compose each test, and since the raw score is more likely to be influenced by erratically correct and incorrect responses, it was felt that the weighted score yielded a more reliable measure of a subject's true ability. In view of these considerations and findings, only weighted scores have been used for purposes of correlations and comparisons with other measures used in this study.

(3) A high reliability coefficient of .86 was obtained for the vowel test from a retest of a group of 30 subjects after a semester of phonetic training. The method was that of self-correlation using the Pearson Product-Moment formula. The reliability of the consonant test was considerably lower, only .31. While performance on the consonant test was definitely improved by the phonetic training, there being a difference of .20 between the mean scores at the beginning and at the end of the semester, the vowel test scores remained relatively constant, showing a small loss, instead of a gain, of –.05 between means.

These results indicate that the auditory memory span for vowel sounds is relatively independent of phonetic training. In the case of

[15] Garrett, H. E., "The Relation of Tests of Memory and Learning to Each Other and to General Intelligence," *Journ. of Educ. Psychol.*, 19, 1928, 601–613.

the consonant test, however, such training tends to improve performance but not proportionally for all members of a group. There was evidence to indicate that this improvement had to do with the oral reproduction of the consonant sounds, it having been discovered that the individual untrained in phonetics often finds it difficult to reproduce orally consonant sounds in isolation.

(4) A correlation coefficient of $+.47 \pm .046$ was found when vowel scores were compared with consonant scores. While this r is substantially higher than that shown by a majority of previous studies in which other types of materials were used, the fact that it was not still higher was interpreted to reflect the possible influence of various extraneous factors which were discovered to affect performance on the consonant test to a greater degree than on the vowel test. Among these factors, which can only be mentioned here by way of summary, are included the influence of phonetic training on consonant scores mentioned above, the ability of the subjects to make fine discriminations among speech sounds when hearing them pronounced, the greater readiness with which consonants are visualized by the average subject, and the difficulty which some subjects experience in attempting to reproduce consonant sounds orally.

(5) Pitch discrimination was found not to be related to auditory memory span, within the limits of the group studied. This was indicated by the low correlation of $+.12$ between scores on the Seashore Sense of Pitch test and weighted scores on the vowel sounds test for a group of 55 subjects.

(6) For a still more limited group there was no evident relationship between auditory memory span, as measured by these tests, and auditory acuity as measured on an audiometer. Elaborate hearing tests were given to a group of 28 subjects included in the present study. No defects of hearing were found among those subjects making the lowest scores on the memory span tests within this group, nor did those for whom a slight hearing loss was discovered present the shortest spans.

(7) While this investigation did not include a study of native language and speech development in the child, significant evidence was discovered of a positive relationship between auditory memory span and ability in and learning of foreign language. In the first place, when the high school and college grades earned by the subjects in foreign language study were correlated with their weighted auditory memory span scores for vowels, the coefficient of correlation

obtained from the Pearson formula was found to be $+.34 \pm .05$. Since this r is almost seven times its probable error, some degree of correlation is indicated. However, it is not particularly high and may reflect in part the fact that a still higher correlation was found between memory span scores and general university grade point averages, as will be shown later. It should also be remembered that foreign language grades are based upon written work as well as oral performance, and that school grades in general constitute at best a doubtful indicator of ability.

Of more interest and importance were the results obtained from a study of other items relative to the subjects' foreign language background and achievements. Table I shows a comparison between years

TABLE I

SHOWING RELATIONSHIP OF MEAN AUDITORY MEMORY SPAN SCORES FOR VOWELS TO YEARS OF FOREIGN LANGUAGE STUDY

YEARS OF FOR. LANGUAGE STUDY		MEAN VOWEL SCORES	
YEARS	N	WEIGHTED	RAW
1	1	3	5
2	10	4.90	5.86
3	17	4.20	5.04
4	13	4.56	5.33
5	25	4.49	5.32
6	21	4.70	5.45
7	23	5.06	5.76
8	12	4.86	5.58
9	4	5.16	5.75
10 or over	6	5.33	6.12

of foreign language study and the mean weighted auditory memory span scores for vowels made by those subjects whose total time of language study is represented by those particular years. It can be seen that, with the exception of the groups represented by the second and seventh years, the relationship is very close. In any case, a high degree of correspondence is indicated.

One should not conclude from this, however, that foreign language study increases memory span or even that it improves performance on the tests. Rather, the more likely conclusion appears be that those individuals possessing a superior auditory memory span found foreign language study easy and interesting, received good grades in it, and as a result took more years of it than those less fortunate students whose shorter memory spans, among other things

perhaps, made foreign languages more difficult and arduous. A number of the results appear to support this conclusion.

In the first place, reference should be made to the data obtained from the retest of the group discussed in section (2) after a semester of phonetic training. These results seem to indicate that language training would likely have little effect upon auditory memory span scores for vowels. Of similar import is the information obtained from a comparison of memory span scores made by those subjects coming from homes in which a foreign language had been spoken, in addition to English, with those from homes in which only English had been heard. Reference to Table II shows that mean scores made by

TABLE II

SHOWING RELATION OF MEAN AUDITORY MEMORY SPAN SCORES FOR VOWELS TO FOREIGN LANGUAGE BACKGROUND AND ACHIEVEMENT*

		N	MEAN VOWEL SCORES WEIGHTED	RAW
1. Has a foreign language been spoken in the home?	Yes	41	4.61	5.34
	No	91	4.74	5.51
2. Are foreign Languages easy for you?	Easy	47	5.00	5.73
	Average	57	4.59	5.36
	Difficult	28	4.36	5.11
3. Do you enjoy the study of foreign language?	Very much	46	4.92	5.63
	Average	64	4.61	5.37
	Dislike	20	4.53	5.33
4. Ability of *S* to speak a foreign language	Fluently	4	5.25	6.50
	Fairly well	46	4.87	5.46
	With difficulty	56	4.70	5.52
	Not at all	27	4.50	5.29

* Based upon responses of the subjects.

the former group of subjects are actually lower than those made by the latter group.[16] These results contra-indicate material dependence of memory span upon language background or training.

That the opposite may in fact be true is further suggested by reference to the remaining sections of Table II. In every instance, save one in the raw scores under section 4, there is a perfect correspondence between mean auditory memory span scores and indicated foreign language aptitude and achievement. The implications for Speech to be found in these results arise from the assumption that whatever is true of memory span and foreign language achievement would also apply, with probably even greater force, to native language ability and learning.

(8) Auditory memory span is positively related, but only moderately, to the capacity to do school work, to the extent that that

[16] In this connection it should be understood that both groups spoke English as their "native" language.

capacity is indicated by school grades. A correlation coefficient, again using the Pearson formula, of $+.37 \pm .052$ was obtained between weighted memory span scores for vowels and University of Wisconsin grade point averages.

(9) Auditory memory is also involved to a moderate degree in the complex of abilities measured by the University English Usage Examination, which the University of Wisconsin gives routinely to entering freshmen. When percentile rankings on the English Examination were correlated with the weighted scores on the vowel test, a coefficient of $+.35 \pm .07$ was obtained.

(10) Auditory memory span for vowel sounds bears a slightly lower degree of relationship to general intelligence. Two measures of intelligence were used: The American Council Psychological Examination, which is routinely given to entering freshmen, and intelligence quotients. Percentile rankings on the first measure yielded a correlation coefficient with weighted memory span scores for vowels of $+.307 \pm .058$. The second measure showed a correlation of $+.325 \pm .059$.

Summary of Conclusions.

On the basis of the findings brought out in this investigation, the following conclusions are indicated:

(1) The memory span for speech sounds is materially lower than the accepted norms for digits.

(2) The auditory memory span for speech sounds, particularly vowels, appears to be independent of phonetic training and a foreign language environment. The vowel sounds test was found to be highly reliable.

(3) Neither pitch discrimination nor auditory acuity is related to auditory memory as measured by the vowel sounds test.

(4) A relationship is indicated between auditory memory span for speech sounds and ability in and learnings of foreign language. The findings indicate that this relationship is in the nature of a partial dependence of language skill upon memory span.

(5) Auditory memory span is positively related, but only to a moderate degree, to school grades, knowledge of English usage, and general intelligence. It may be worthy of note that the obtained coefficients of correlation with all of these measures are very similar.

(6) The investigation as a whole yielded sufficient evidence to suggest that speech sounds, more especially vowels, constitute highly desirable material for a test of auditory memory span.

A STUDY OF SPEECH ATTITUDES AND ADJUSTMENTS*

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INTRODUCTION

IT IS apparent to the casual observer that all men do not speak equally well. In the attempt to discover the causes for these individual differences in the proficiency with which men speak many different methods of analysis of the problem have been undertaken. Some of the most common approaches to the problem have been concerned primarily with studies of the voice, language and other symbolic activities involved. Comparatively little attention has been paid to the analysis of the user of these symbolic activities as a personal entity, or personality. The present study was undertaken with the hope of adding to our understanding of the process of speaking through the application of techniques developed by the students of the psychology of personality to this problem.

Gardiner [1] has pointed out recently that when we observe acts of speech in their "original setting of real life" . . . the speaker "constitutes one of the important elements of the process." Students of speech are frequently aware of personality problems which, according to their own beliefs at least, interfere with the effectiveness of their speaking. Roback [2] states that 37% of 1000 students in extension schools for adults reported self-consciousness "their greatest

* The writer wishes to express his appreciation here to the many persons who have cooperated in supplying data for this study. Some of the computations for Group 1 were done by Donald Hargis, now of the Department of Speech of the University of Oregon, and for Group 4 by Esther Hoyer of Red Wing High School of Red Wing, Minnesota, and are reported here with the computations on these groups in combination with other groups and with the major work on the project with their permission. Some of the early work on this project was made possible by a grant of funds from the Committee on General Research of the Graduate School of the University of Minnesota. The project has been brought to completion by the assistance of workers supplied by the Works Progress Administration, University Research Project WP5209, Subproject 96.

[1] Gardiner, Alan H., *Speech and Language,* Oxford: The Clarendon Press, 1932.

[2] Roback, A. A., *Self-Consciousness Self Treated,* Sci-Art Publishers, 1936, 41–42.

personal handicap in life." Three college teachers of speech at the University of Minnesota rated 210 students during a speech project assignment on seven specific speech traits and on the quality called general effectiveness of speech. When the three ratings were combined they provided an index of speech proficiency with a reliability of $+.82 \pm .02$. The correlation of the average rating of the three instructors on the trait of "general effectiveness" with the trait referred to as "speech attitudes" or "confidence and enthusiasm varying down an assumed scale continuum to extreme nervousness and stagefright" was $+.90 \pm .01$. In another group of 277 students, the correlation of the judgments of individual instructors on these two traits was $+.82 \pm .01$. These two groups of students were asked to indicate on a blank slip of paper at the first meeting of the course what they thought were their major speech problems. Fifty-six per cent of the first group and 61 per cent of the second group listed some form of nervousness as one of their speech problems. In another group of 512 high school students of speech rated by eight speech instructors in different school systems, only 29 per cent were judged to be free from some form of emotional difficulty in speaking situations. When these same high school students were asked to rate themselves on a three-point nervousness scale, 74 per cent of them judged themselves to be at least somewhat nervous when speaking. Although the "halo" effect in rating may have influenced these judgments, it is also possible that this evidence may be interpreted as suggesting that there may be some significant relationship of this characteristic of personality to the problem of general effectiveness in speaking.

Stagefright may be studied as a personality problem. Many of the text books on speaking advise that nervousness may be eliminated by control of two elements of the process, first by more or better preparation of the specific speech, and second by much practice in speaking. It is possible that such advice has been limited by a failure to realize the nature of the psychological processes involved. It remains to be demonstrated, however, what light research may throw upon the causes and methods of relief from emotional maladjustment in speech activities, and whether or not a more thorough psychological analysis of such problems is useful in Speech education.

It is a fact that modern texts in the field of speech have dealt at most only incidentally with this problem. In a study of twelve widely used text books prepared for beginning courses in speech at the col-

lege level, with one exception written or revised since 1930, the following conditions prevail. In five of them, one finds no mention of the word "personality" in the index, and in two, only brief general discussions of the concept are indicated. One uses the word in connection with the topic of outlining, another discusses it in connection with bodily action, and in a third we are told that "Personality is a general and unscientific term." The eleventh book in this list, and the aforementioned exception was published in 1924; and at least until recently contained the only attempt at a general psychological treatment of the relationshp of characteristics of personality to speaking prepared within the field of Speech in this country. In 1937, "The Speech Personality" [3] made its appearance as a speech test for first course students of Speech. To be sure many of the text books in the field treat in a general way problems which may be related to the personality, yet it may be safely stated that there has been little specific application to everyday speech problems of the concepts or techniques developed in other fields for studying this property of human nature and social phenomenon.

In the specialized studies of speech pathology the personal aspects of speech have had more extensive investigation, but since the problems of speech pathology are not the focal point of attention in this study, we need not concern ourselves here with those studies.

One of the reasons for this state of affairs is, no doubt, that the techniques for profitable study of personality are only of recent origin, and are still being developed. As late as 1928, Roback[4] wrote "There is one department in psychology (personality) in which no progress seems to have been made for about two thousand years, in spite of the fact that it was perhaps the first topic to attract attention." Within the last ten years, however, the concept has received extensive and intensive attention within the fields of psychology, education, and allied disciplines. In the single year of 1937, Psychological Abstracts [5] alone reviewed 162 articles under the title of "Personality."

This research project had its origin in the curiosity of the writer as to the possibility of the development of tests or scales through which the relationship of at least some of the characteristics of the

[3] Murray, Elwood, *The Speech Personality*, Lippencott, 1937.

[4] Roback, A. A., *The Psychology of Character*, Harcourt, Brace and Company, 1928.

[5] See *Psychological Abstracts*, Vol. XI, 1937, p. 721.

personality of the speaker to the effectiveness of his speaking might be analyzed. Although a great many personality tests have been developed for various research or diagnostic purposes, at the time of the origin of this project the writer knew of none which had been designed specifically for the purpose of analysis of the personality of the speaker. Some case history forms were available, but the questions in most of these could not be readily submitted to objective analysis. Although the writer, with others who have occasionally reported studies in the literature,[6, 7, 8] has experimented with the use of existing standardized tests, there remained the question as to whether or not the development of new tests, constructed in the speech situation and specifically designed to answer definite questions, might not be more useful than other tests had proved to be. The possibility appeared to justify the effort, and the present project was undertaken.

The situation presented a typical problem in test construction. An analysis of class room speaking had focused attention on characteristics of the personality of the speaker which might be subject to measurement. These traits or tendencies could be described in detail. Statements about them could be cast into scale form for purposes of quantitative analysis. Preliminary scales were to be tried out; and preliminary reliabilities and validities of the measuring instruments determined. Then the scales might be subjected to item analysis for purposes of determining accuracy of preliminary scoring, of increasing the validity of the scales as a whole, and of making them as short as possible to increase the convenience of their use. In the new forms they could be tried out again on new subjects to verify experimentally the validating procedures. After this the tests might be used to determine the relationships of various characteristics of personality to the speech functions in question. Moreover the analysis of the tests themselves might be used to throw light on the nature of problems in speech education. This general plan was followed in the development of this project. It was perhaps too much to hope that the first attempts at this work should present many final answers to general

[6] Knower, Franklin H., "Psychological Tests in Public Speaking," *Quarterly Journal of Speech,* Vol. 15, 1929, 217–222.

[7] Mabie, E. C., "Speech Training and Individual Needs," *Quarterly Journal of Speech,* Vol. 19, 1933, 341–356.

[8] See articles edited by E. C. Murray, *Speech Monographs,* Vol. 2, 1935, 50–60.

questions. The writer shall deem the project a profitable venture if the results here presented focus attention on what he believes to be a useful type of research in speech education.

The two major scales developed in this project are designated respectively a "Speech Attitude Scale" and "A Speech Experience Inventory." The phrase "Speech Attitudes" as used in this study may be defined briefly as the way the individual feels about speaking. If he enjoys speaking, is poised, confident and enthusiastic in his use of speech he is said to have a positive speech attitude. On the other hand, the individual who dislikes and who avoids speaking, is shy, timid, nervous and suffers marked emotional frustration while speaking is said to have a negative speech attitude. The question as to whether these characteristics constitute a continuous variable is one of the problems investigated in this project. As an index of the way the subject feels about speech the scale may be considered, primarily at least, a subjective measuring instrument.

The "Speech Experience Inventory" was designed to provide an index of the kind and frequency of speaking the individual does. It may be considered an adjustment scale in that it is a device for measuring behavior tendencies as contrasted with feeling tendencies.

The third scale that was developed in this project was developed primarily as a research instrument, and designated an S. C. (Speech Convention) Scale. It might have been termed a speech rationalization scale. In talking with students who received low scores on the speech attitude scale, it was observed that they frequently objected to the attempts to get them to develop a more positive speech attitude by citing some convention which in their view conflicted with the adjustment recommended. For instance they would make remarks such as "Persons who engage strangers in conversation are too bold," "Persons who talk very glibly are usually pretty shallow," or "One who criticizes the mistakes of another is apt to hurt his feelings." It appeared possible that one of the reasons for a negative speech attitude might be the acceptance of negative speech conventions. If this hypothesis should be true an attitude scale made up of a number of statements of such negative speech conventions should give the speaker with a poor speech attitude a high negative speech convention score, and the speaker with a positive speech attitude would get a low negative speech convention score. The contention that the scale might be called a rationalization scale is derived from the fact that even if such a negative correlation between the two scales exists, it

is quite as possible that the acceptance of the negative speech conventions is an effect of negative speech attitudes, and therefore a rationalization of them, as that it is a cause of the negative speech attitudes. In either case, the determination of the existence of such a negative correlation presents an interesting problem for study.

Two other measuring instruments referred to in this report, a Case History Questionnaire and a Speech Problem Survey Scale have been developed in cooperation with a colleague, Dr. Howard Gilkinson. The Speech Problem survey scale was used in obtaining some of the ratings used in the study, and the Case History Questionnaire was used in the study of the relationship of the scales to some reported traits of personality. A complete analysis of these instruments will be reported at a later date.

The writer does not propose to enter here into a general discussion of the hypotheses involved in the selection of the psychological concepts of attitudes and adjustments as the major characteristics of personality to be analyzed. Those interested in an analysis of the general theories of attitudes and adjustments and their measurement are referred to the literature of the fields of psychology and education for such material.[9] A brief discussion, however, may be useful.

[9] See especially such references as:

a. Allport, F. and D. Katz, *Student Attitudes,* Craftsman Press, 1931.

b. Symonds, P., *Psychological Diagnosis in Social Adjustment,* American Book Company, 1934.

c. Symonds, P., *Diagnosing Personality and Conduct,* The Century Company, 1931.

d. Symonds, P. and C. Jackson, "Measurement of the Personality Adjustments of High School Pupils," Bureau of Publications, Teachers College, Columbia University, 1935.

e. Rundquist, E. and R. Sletto, "Personality in the Depression," University of Minnesota Press, 1936.

f. Bingham, W. V., *Aptitudes and Aptitude Testing,* Harper and Brothers, 1936.

g. Paterson, D., G. Schneidler and E. Williamson, *Student Guidance Techniques,* McGraw-Hill Book Company, 1938.

h. Remmers, H. H., "Studies in Attitudes," *Purdue University Studies in Higher Education,* Vol. XXXV, Number XXVI, 1934.

i. Likert, Rensis, "A Technique for the Measurement of Attitudes," *Archives of Psychology,* No. 140, 1932.

j. Sletto, R. F., *Construction of Personality Scales by the Criterion of Internal Consistency,* The Sociology Press, 1937.

k. *The Thirty-Seventh Yearbook of The National Society for the Study of Education,* Part I—Guidance in Educational Institutions, 1938.

l. Strong, Ruth, *Behavior and Background of Students in College and Secondary School.* Harper and Brothers, 1936.

The concept of speech attitudes is admittedly a general one, yet in the writer's opinion it may be made sufficiently simple to be practical without becoming involved in an elaborate system of psychological theories. The major hypothesis involves the simple assumption that the individual who enjoys speaking and who does much speaking will probably be a better speaker than the individual who dislikes to talk and who has had relatively limited speech experience. A favorable attitude or "set" toward speech indicates a predisposition to speak and reflects an interest which should broaden experiences through which learning may take place. The favorable attitude may itself facilitate learning. Moreover favorable attitudes should facilitate integration of the speech processes in speaking. To obtain a relatively complete picture of the effect of this predisposition on speech, a record of experiences is needed to supplement the index of attitudes. Some individuals may have favorable attitudes and yet be deficient in speech because of little opportunity for experience. Others with much experience may have forced themselves to speak in spite of unfavorable feelings, but because of such attitudes have made little progress in improving speech. What the individual has done about speaking may be as important both from his own and the social point of view as how he has felt. In other words, neither positive attitudes nor experience may justify an assumption of the development of good speech, whereas a favorable combination of the two might provide a reasonable basis for the development of effective speaking habits.

Moreover, the speech experience of the individual may be in and of itself an index of his proficiency. If he has spoken and not spoken well the opportunities his fellows give him for the use of speech will be fewer than if his speech has been enjoyed by them. The social environment may act as a selective factor to improve the speech of those who show speech proficiency at an early age, and to discourage the improvement of speech of those who do not show such early proficiency.

Some of the specific questions to be answered and hypotheses involved in the procedure are suggested in the following discussion. Are the speech attitudes of the individual general or specific, and different in different situations and under various conditions? If they are general traits of the individual, an individual who registers positive speech attitudes in one random sampling of situations should also register positive attitudes in another sampling of such situations. In other words a test of speech attitudes should show high reliability.

This does not mean that an individual may not possess unique attitudes in isolated situations which are inconsistent with his attitudes in most situations, but only that he has a general way of feeling which is tapped by his responses to the typical situations. Are some speech situations better indices for an attitude test than other situations? If these situations or activities differ from age to age and sex to sex, which activities serve as the best test items for various groups? Are there any speech situations in which the attitudes of superior speakers are found to be different from the attitudes of inferior speakers? If such situations exist they should provide the basis for a diagnostic text of speech attitudes. What is the relationship between the speech experience of the individual and his speech attitudes? How is speech experience related to proficiency in speaking? How are general differential judgments of speech attitudes and general proficiency in speech formulated by the speaker himself and by observers related to indices of attitudes and experience derived from accumulated judgments about many specific situations on a test form? What are the relationships of tested speech attitudes and experience to other characteristics of the speaker's personality? Are the speech attitudes of the individual subject to change? And finally, what implications can be drawn from such a study of speech attitudes for the process of teaching speech?

Chapter II

Formulating the Scales

The formulation of these scales was begun upon the basis of a common hypothesis in test construction. It was assumed that the individual's attitude toward a large number of speaking activities and processes reflected in his reaction to statements about these activities in a scale might indicate a "core" or general speech attitude which is relatively stable. If individuals show significantly different general attitudes on such a scale it would prove a useful diagnostic and research instrument.

Statements for the Speech Attitude Scale were first collected and formulated to reflect ways of feeling about the use of speech. The statements finally selected for the scale had to do with feelings about speaking on various subjects, to various persons, in different situations, and while using various forms and processes of speaking.

Many more statements were developed for the first forms of the scale than it was thought would be necessary for the final forms. It is theoretically more desirable that first forms of such a scale have more items than are necessary, than not to have enough. The statements were simple statements; and verbs were used which suggested feelings of various kinds and degrees of intensity. Only statements which appeared to reflect a feeling or attitude were used. They were worded in such a way that selective reactions would be relatively easy to make. Words with common double meanings, and negative choices which involved the use of the double negative were avoided. Half of the statements were worded to suggest a negative feeling and the other half worded to suggest a positive feeling. The positively and negatively worded statements were presented in a jumbled order to prompt careful attention to each statement in the process of checking.

A modification of the Likert [10] technique of attitude scaling was used. The multiple choices allowed were:...Almost Never...Seldom, ...Occasionally, ...Usually, and ...Almost Always, instead of the Likert choices of ...Strongly Disapprove, ...Disapprove, ...Undecided, ...Approve, and ...Strongly Approve. This change puts the choice as applied to the personal feeling on a frequency basis rather than an intensity basis. The choices used appeared to offer greater probability of producing a broad measure of the attitude involved as it appears in the use of speech than would the choices of approve or disapprove. The same possibility also seemed to characterize the Rundquist and Sletto [11] choices of agree and disagree. The five choices were scaled progressively on the positively worded items with values of "1" for the Almost never choice to "5" for the Almost always choice. The score values for the negatively worded items were reversed. This procedure provided constant positive values for frequent favorable reactions and infrequent unfavorable reactions.

The first form of the scale or the scale we shall refer to as Form A, contained 250 statements. Of this number 176 were retained in the second form and 16 new statements were added to produce 192 statements used in Form C. In Form D and Form E 96 of these Form C statements were used to make two scales of 48 items each. These statements were again combined in Form F, the final form of the scale, to make a 96 item scale. The procedure and reasons for

[10] Likert, Rensis, *ibid.*, 14ff.

[11] Rundquist, E. and R. Sletto, *ibid.*, 9ff.

varying the number of items in various forms will be explained later.

All the statements used are presented in the list at the end of this chapter. The first 48 statements were those used in Form D, and the Second 48 those used in Form E. These 96 statements combined to produce Form F. The next 96 statements, that is those numbered 97 to 192, were the statements used in Form C and eliminated in Forms D, E, and F. The last 74 statements, or those numbered 193 to 266, were the statements used in Form A and eliminated in latter scales. The basis of selection and retention of these items is explained in the section dealing with item analysis. The multiple choices have been included in the list only for the first 4 items of those retained in Form F of the Scale. The directions for taking the test were always the same as those presented at the head of the list of items. Items which were scored negatively for the rest of the list are followed by the letter "(N)."

The statements for the Speech Experience Inventory were formulated, with the following exceptions, in much the same way as the speech attitude statements. The statements referred only to speech behavior, rather than to feeling about behavior. They were all worded positively. The multiple choices allowed were: ...Seldom or never, ...Quite infrequently, ...Average, ...Quite frequently, ...More frequently than most people. With these choices the individual might not only scale the item but at the same time scale his judgment of his comparative experience with each form of speech for himself and his associates. The score values attached to each choice were progressive from "1" to "5."

The statements used in this scale are listed following those used in the Speech Attitude Scale. The first scale contained all 100 statements. The first 48 were retained in the final form of the scale, referred to here as Form C. The other statements numbered 49 to 100 were eliminated. The directions given for taking the test were always the same as those given at the head of this list. The multiple choices are included on this list of scale statements for only the first twelve items.

The statements developed for the S. C. Scale all involved the formulation of a negative judgment about the practice of certain characteristics or forms of speech. In setting up this scale, items involving two conventional referents were selected, and half of the statements involved one referent and half on the other. The odd numbered items referred to a convention with values which had to do with

the speaker in a speech situation, such as being foolish, egotistical, conceited, bold, flashy, etc.; while the even numbered items referred to values which had to do with the consideration of the auditor in the speech situation, such as tactless, socially irritating, unkind, meddlers, poor sports, etc. This was done to determine the relative motivating value upon speech of egocentric and sociocentric convention values. This order for the arrangement of items is retained in listing them here. The form of these statements makes them somewhat more objective and indirect in type than the statements in the other two scales. The Scale was always merely labeled as S. C. Scale to avoid suggestion to the student that it was constructed to provide an index of speech conventions.

A four step multiple choice reaction opportunity was provided in these statements. This was done to force the choice among alternatives which were either favorable or unfavorable to the statement. The multiple choice steps with item values used in scoring were: ...1. Disagree, ...2. Moderately Disagree, ...3. Moderately Agree, ...4. Agree. A low score on this scale is, according to the hypothesis, a good score and a high score a poor score. The statements used are presented following those of the Speech Attitude Scale and Speech Experience Inventory. The first 48 items are those retained in the final form or Form B of the scale. The directions for taking the test are presented at the beginning of this list of items. The hypothesis on which the scale is constructed involves the following inferences in terms of scale scores.

The subject who gets a high score on the scale has accepted many of these negative speech conventions, and has indicated an aversion or negative attitude toward the speech activities and processes which are suggested. He may be described as socially typical or a conformist. If the score is comparatively higher on the sociocentric items than on the egocentric items he may be said to rationalize his typicality in terms of the effect of his speech on others, or in terms of sociocentric conventions. If his score is higher on the egocentric items than on the sociocentric items, he indicates a tendency to think of his typicality in terms of the social effect of his speech activities on himself, or in terms of egocentric conventions. In other words a speaker may be a poor speaker because his speech activities are inhibited by his acceptance of egocentric or sociocentric conventions. If the score is high on both types of items the individual may be termed a complete conformist in speech activities. He might be designated a follower

rather than a leader in that he shows no tendency to independence in his use of speech.

The subject who gets a low score on the scale has rejected many of these negative speech conventions, and indicated a positive attitude toward the use of these speech activities and processes. He may be described as socially atypical and self-sufficient. He is able to forget himself and avoid concern over the negative effect of his speech on himself or others. If his score is lower on the egocentric items than on the sociocentric items he shows less concern over the effects of his speech activities on himself than on others. If the score is lower on the sociocentric items than on the egocentric items he shows less concern for the effect of his speech on others than its negative effect on himself. If it is low on both types of items he may be thought of as one who wants to lead rather than follow convention. He is socially a complete atypical.

SPEECH ATTITUDE SCALE

Name..... Date..... Sex..... Age....
(Print)

READ CAREFULLY

On the following pages you will find statements which express an attitude toward various speech situations. You are asked to judge the frequency with which your attitude corresponds with the one expressed by the statement. Each statement is followed by a series of five terms which are to serve as a key in recording your judgment. Check the term below each statement which indicates the frequency with which your reaction corresponds to the one indicated in the statement. Check each statement on the basis of your first reaction and proceed. INDICATE YOUR REACTION TO EVERY ITEM. If you have never experienced the situation indicated by the statement, check the statement in accordance with the way you think you would probably feel in that situation. A sample item is presented below to illustrate the method to be followed in checking the items.

Sample.

x. I hesitate to talk about my childhood experiences.
...Almost never...Seldom...Occasionally...Uusually...Almost always

If you "Almost never" hesitate to talk about your childhood experiences, place a check in the space preceding the term. If you "Seldom" hesitate, place a check in the space at the left of the term. If you "Occasionally" hesitate, check the space at the left of the term. Proceed the same way for "Usually" and "Almost always."

PLACE A CHECK IN ONE OF THE SPACES FOR EVERY STATEMENT

1. I am ill at ease when speaking with a group composed entirely of members of the opposite sex.
...Almost never[5]...Seldom[4]...Occasionally[3]...Usually[2]...Almost always[1]
2. I find it easy to solicit money for a cause in which I am interested.
...Almost never[1]...Seldom[2]...Occasionally[3]...Usually[4]...Almost always[5]
3. I am ill at ease when making a speech in the presence of critics.
...Almost never[5]...Seldom[4]...Occasionally[3]...Usually[2]...Almost always[1]
4. I enjoy meeting and talking with famous people.
...Almost never[1]...Seldom[2]...Occasionally[3]...Usually[4]...Almost always[5]

5. I dislike to take an active part in the ritual of a club or fraternity. (N)
6. I enjoy making a speech in a large auditorium.
7. I hesitate to protest even though I feel that I have been treated unfairly. (N)
8. I avoid making formal speeches. (N)
9. I like to use my hands in making gestures when I talk.
10. I enjoy introducing a guest to a group of friends.
11. I dislike to try to make an impromptu speech. (N)
12. I dislike making a speech to an audience from behind footlights. (N)
13. I enjoy discussing philosophical questions.
14. I enjoy trying to make an inspirational speech to a small group.
15. I like to start off the discussion in a forum or discussion group.
16. I am bored by discussions of politics.(N)
17. When I speak I worry about becoming so confused that I shall be unable to continue.(N)
18. I dislike to talk to people with whom I have difficulty in making myself understood.(N)
19. I enjoy reciting verses I have memorized.
20. I enjoy speaking in competitive speech activities.
21. I hesitate to be forward in conversation for fear I will appear conceited.(N)
22. I dislike to talk with strangers.(N)
23. I like to question people to get them to talk.
24. I like to point out mistakes in other people's reasoning.
25. I enjoy serving as a judge in public events.
26. I hesitate to request tradespeople to look again when they first report that they cannot supply an article.(N)
27. I am free from worry about appearing unnatural when I make a public speech.
28. I am embarrassed by the necessity of talking to an audience containing close friends.(N)
29. I like to talk about my hobbies.
30. When I have been embarrassed by something I have done, I find it difficult to speak in such a way that I can cover up my embarrassment.(N)
31. I hesitate to try to argue myself into a position when I feel that more competent persons are also seeking it.(N)
32. I have difficulty in deciding what to say to a stranger to open a conversation(N)
33. If I can sit down as I speak, I feel less nervous than if I must stand up to speak.(N)
34. I find it easy to keep control of my voice when speaking.
35. I find it easy to look directly at persons with whom I talk.
36. I find it easy to tell a salesman why I prefer the products of another.
37. I dislike to ask for something when I feel that I shall be refused.(N)
38. I can remain at ease even when carrying on a conversation with a person who obviously dislikes me.
39. I hesitate to accuse a person who I am sure has stolen a piece of my property.(N)
40. When I have an idea for enlivening a dull party I like to present it for action.
41. I am ill at ease when a person of the opposite sex whom I like very much is in the audience.(N)
42. I find it easy to be frank and criticize a friend when he asks me to do so.
43. I am embarrassed when I am asked to explain my way out of a situation which is apparently compromising.(N)
44. I hesitate to make special requests of a waiter in a restaurant.(N)
45. I find it difficult to enter into discussions of business and economics.(N)
46. I enjoy carrying on a conversation at a formal tea or dinner.
47. I like to mimic others.
48. It is easy for me to lead a cheering section at a sports event.

49. I hesitate to talk to a person whom I revere highly.(N)
50. I enjoy telling jokes on myself.
51. I find it embarrassing to explain why I will not contribute to a cause in which I ought to be interested.(N)
52. I like to discuss books I have read.
53. I dislike to engage in lengthy conversation as a pastime.(N)
54. I am at ease while making a pep talk.
55. I fear that what I have to say may not interest others.(N)
56. I feel ill at ease when trying to sympathize with a friend who has lost a close relative.(N)
57. I like to go to a superior who has given me an unfair rating and talk the matter over with him.
58. I like to show a superior how he can improve methods of doing his work.
59. I am embarrassed after I have spoken up impulsively in a meeting.(N)
60. I feel muscular tensions in my body which I am unable to control when I speak.(N)
61. I like to take the initiative in getting acquainted in a large group.
62. I find it easy to express my appreciation when pleasantly surprised.
63. I like to move around when I speak from a platform.
64. I find it difficult to talk back when a guard or gateman speaks harshly to me.(N)
65. I hesitate to insist upon special service from tradespeople or public employees even though I want it very much.(N)
66. I dislike to undertake a formal interview.(N)
67. I find it easy to squelch persons who tease me.
68. I like to carry on a conversation with older people.
69. When I am asked sharply and unexpectedly for some common bit of information, I find it difficult to reply.(N)
70. I am embarrassed by the necessity of setting a price on my work.(N)
71. I am free from worry about making errors in grammar when I speak.
72. I like to volunteer my testimony to help another person out of trouble.
73. I like to participate in competitive games where conversation plays a part.
74. I am nervous when introducing a famous speaker to an audience.(N)
75. I like to match wits with dictatorial and domineering people.
76. I have difficulty in apologizing to a person when other persons are present.(N)
77. It is easy for me to direct a stranger to find a place in the city.
78. I have difficulty in controlling my breathing when I try to speak to a group.(N)
79. I become especially nervous just before I am called upon to speak. (N)
80. When I am highly praised, I am easily flustered.(N)
81. I have difficulty in keeping my arms and legs from trembling when I make a public speech.(N)
82. I find it easy to criticize others for the mistakes they make.
83. I like to tell stories around a campfire.
84. I am free from worry about saying the wrong thing when I speak.
85. I hesitate to talk about any of my interests which others might consider queer.(N)
86. I enjoy acting in costume and make-up.
87. I feel that I want to apologize when I make a speech.(N)
88. I find it easy to make excuses to avoid accepting an invitation I don't want to accept.
89. I am ill at ease in a situation in which a person asks me a great many questions.(N)
90. I enjoy giving a memorized speech.
91. I am ill at ease while speaking in social situations which are strange to me.(N)
92. I dislike to conduct group games.(N)
93. When people talk of matters about which I am sensitive I avoid entering into the conversation.(N)

94. I feel like doing my best in discussions with people who like to argue.
95. I take pride in the effectiveness with which I speak in public.
96. I am sure of myself when acting as toastmaster at a banquet.
97. I like to talk about characters and incidents of history.
98. I enjoy talking about religion.
99. I find it easy to talk back when I am blamed falsely for an accident or mistake for which I am not to blame.
100. I feel embarrassed when I turn down a salesperson of the opposite sex who takes the trouble to show me some goods.(N)
101. It is a nervous strain to offer a prayer in a group.(N)
102. I am bored by discussions of sports.(N)
103. I enjoy taking the opposite side of an argument for the sake of discussion.
104. I have no difficulty giving commands or announcements as an officer.
105. I like to talk with professional people about their work.
106. I get a thrill out of talking myself out of getting a tag for a traffic violation.
107. I avoid talking with tradespeople about anything but business matters.(N)
108. I hesitate to talk in places where one is supposed to be quiet.(N)
109. I like to encourage people to do their best.
110. I don't like to serve as program chairman.(N)
111. I dislike to have to admit I can't dance, play cards, sing or do some other social act.(N)
112. I have dreamed of making impressive public speeches.
113. I speak best when under stress such as in applying for a job.
114. I have no difficulty in selecting words from my vocabulary to express myself.
115. I like to stir up an inattentive or indifferent auditor.
116. I dislike trying to talk with people when I am blue.(N)
117. I am at ease leading group singing.
118. I prefer to bluff about little matters rather than admit that I do not know.
119. I can talk with a person I dislike without showing my dislike.
120. I am bored by discussions of sculpture, painting, etc.(N)
121. I like to inquire about accidents upon which I happen on the street or road.
122. I enjoy criticizing a person's theories when I feel that they are unsound.
123. I avoid talking with people who are dirty and unkempt.(N)
124. I like to discuss my dreams and ambitions for the future.
125. I dislike talking over the telephone in a room where there are other people.(N)
126. I prefer to put up with minor inconveniences rather than to make a fuss to get them corrected.(N)
127. I hesitate to call out to a friend marching in a parade. (N)
128. I dislike to try to talk where there are many distractions.(N)
129. When I am irritated about something, I like to talk it out of my system.
130. I hesitate to make a small starting bid at an auction where the auctioneer has razzed others for small bids.(N)
131. I am free from the trouble of my mouth becoming dry when I speak.
132. I dislike to talk about the members of my family in public.(N)
133. I like to express myself in unusual ways which people will remember.
134. I like to use quotations, literary references, etc., when I speak.
135. I am willing to persist in asking for a favor even though I have been turned down previously.
136. I hesitate to present my point of view in discussions of topics on which I don't consider myself well-informed.(N)
137. I would rather speak from a high platform than from the same level as the audience.
138. When I am tired, I find it difficult to speak well.(N)
139. I like to bluff to get into a meeting or other place where I am not supposed to be.
140. I enjoy saying things which will shock people.
141. I like to show up a person who is obviously conceited.

142. I feel embarrassed when pauses occur in conversation.(N)
143. I like to talk about the plays which I have seen.
144. I dislike the use of compliments as a means of persuading another.(N)
145. I hesitate to ask a person to do a favor for me.(N)
146. I like to talk about the day's news which has been reported in the papers and elsewhere.
147. I hesitate to take sides in an argument between two friends.(N)
148. I find it easy to go to people who have misunderstood me and correct their opinions.
149. I hesitate to reprimand a child who plays a prank on me.(N)
150. I hesitate to speak brusquely to a stranger who irritates me.(N)
151. I don't like to talk about my worries and troubles.(N)
152. I enjoy taking a verbal dig at a person whom I dislike.
153. I like to advise other people as to what I think they should do.
154. I find it difficult to make conversation when I am bored.(N)
155. I like to make sarcastic remarks in discussions.
156. It is embarrassing to talk with a person who remembers me, but whom I cannot remember.(N)
157. I like to talk about scientific subjects.
158. I dislike to be asked to make the same explanations over and over again.(N)
159. When I am greatly pleased about something I like to talk about it.
160. I hesitate to make remarks in public which would embarrass a friend.(N)
161. My personal appearance does not trouble me when I speak.
162. I avoid questioning a superior about an inconsistency in his position.(N)
163. I like to talk about things I have done or can do.
164. When I want to be alone, I find it difficult to be patient with friends who insist on interrupting me.(N)
165. I hesitate to tease persons who are irritable.(N)
166. I dislike to argue with tradespeople about prices.(N)
167. I avoid correcting people when they mispronounce my name.(N)
168. I dislike talking shop on social occasions.(N)
169. I unhesitatingly appeal to the members of a crowd to aid an injured person.
170. I hesitate to express an opinion on matters about which I am uncertain.(N)
171. I like to tell humorous anecdotes.
172. I dislike to talk in a loud voice.(N)
173. I am irritated when people expect me to engage in small talk.(N)
174. I am willing to speak first when I meet a person who has snubbed me on the street at some previous time.
175. I am irritated by people who want to talk with me while we are attending a public performance.(N)
176. I hesitate to ask a superior about a matter on which I am supposed to be informed.(N)
177. I have little difficulty in finding things to say to keep up conversation.
178. Unless I can speak well of a person, I don't like to talk about him.(N)
179. I dislike to try to sell things.(N)
180. I am not flustered by the necessity of admitting I have been mistaken.
181. I hesitate to go to the parents of a child who has destroyed some of my property and ask for payment of the loss.(N)
182. I like to talk with very young children.
183. I refrain from discussing a matter when I feel that I may make myself ridiculous.(N)
184. I find it easy to say things which will put people at ease in a strained social situation.
185. I am irritated by a person who works me for compliments.(N)
186. I like to make puns on words.
187. I like to make remarks which make the rest of a group laugh.
188. I like to talk with people who come to me for advice in regard to their troubles.
189. When a person asks me to do something which is against my principles, I not only refuse, but also try to change his point of view.

190. When I am angry I have difficulty in expressing my point of view. (N)
191. I find it easy to stall off a creditor who asks me to pay a small debt which I cannot pay at the time.
192. I feel an immense relief after a difficult speech situation is past.(N)
193. I enjoy presiding at business meetings conducted according to formal parliamentary procedure.
194. It bothers me to attempt to read material at sight to a group.(N)
195. I do not get so excited about subjects on which I speak to an audience that I want to shout.(N)
196. I go out of my way to avoid a person who might ask me embarrassing questions.(N)
197. I am confused by people who interrupt me in conversation.(N)
198. I feel embarrassed when I tell a beggar I have nothing for him.(N)
199. I am not at a loss when I am expected to reprimand the members of an audience.
200. It is difficult for me to speak to persons my own age and sex.(N)
201. I should hesitate to mention to a friend that he frequently makes a common social error.(N)
202. It takes a great deal of courage on my part to sell an idea to a superior.(N)
203. It is a pleasure to give a speech of advice on a subject in my experience.
204. I hesitate to carry on a conversation during a card, golf, or other game.(N)
205. It irritates me extremely to talk to a partially deaf person.(N)
206. I am extremely nervous when asking a strange banker for a loan.(N)
207. I like to razz my opponents in a game.
208. I find it easy to pass off derogatory remarks made about me in my presence.
209. I should avoid telling a person who I knew only slightly that he had a smudge of dirt on his cheek.(N)
210. I have spoken harshly to get rid of an unwanted salesman.
211. I develop a great case of "nerves" when asking someone of the opposite sex for a date.(N)
212. I hesitate to talk about my childhood experiences.(N)
213. I find it difficult to turn down a person who asks me to buy a small item as a favor to him.(N)
214. I should hesitate to reprimand a neighbor's child caught stealing fruit or flowers in my back yard.(N)
215. I feel embarrassed when the subject of sex is brought up in a discussion by a member of a mixed group.(N)
216. I am at ease talking to my parents and my friends.
217. I hesitate to break a friend's cherished illusion in public.(N)
218. It bothers me to ask a question of an authority at a forum.(N)
219. It is much fun to razz the players at a football or other game.
220. I like to talk with a group of friends about an absent person.
221. I dislike asking the landlord for improvements in my living quarters.(N)
222. I find it easy to draw a person out to make an innocent commitment on what he would like to have when I expect to give him a present.
223. I should be flustered if someone asked me to repent my sins and join their religious group.(N)
224. I should hesitate to reprimand a friend in a group for a social error.(N)
225. I should hesitate to ask a professor to explain an apparent inconsistency in his lecture.(N)
226. I should report to the professor if he asked me if I saw someone cheating in an examination.
227. I have dreamed of becoming a famous actor or actress.
228. I find it easy to reprimand others for failing to fulfill an agreement.
229. I like to talk over my personal problems with members of my family.
230. It is easy to turn down a member of the opposite sex who tries to sell me something.
231. I have no difficulty in telling a group of friends about my achievements and the honors I have earned.

232. If an acquaintance who was greatly disturbed about being disliked asked me why people disliked him, I would hesitate to tell him the truth.(N)
233. I find it easy to cover up my true feeling and tell a person I like a new piece of clothing even though I think it is atrocious.
234. I lose patience very quickly with people who ask me very dumb questions.(N)
235. When a friend who is known to be in poor financial circumstances insists on paying for the dinner or theater, I would argue with him to let me pay for them.
236. I dislike to speak where I am supposed to try to be funny.(N)
237. I can be most enthusiastic when speaking to an audience of my own sex and age.
238. I feel free to ask an acquaintance to accommodate me even though he can do so only at some inconvenience to himself.
239. I am embarrassed when I must leave a party early and say goodnight to other guests.(N)
240. I find it difficult to praise a person for good work when I do not like him personally.(N)
241. I enjoy telling stories to small children.
242. I enjoy serious discussion about sex with members of my own sex.
243. If I saw a man in a crowd drop a glove I should not hesitate to call out and inform him of his loss.
244. I am bored by discussions of music.(N)
245. I feel embarrassed when I am expected to make a fuss over a very small baby.(N)
246. In a group where I feel someone has received undeserved honor, I go along with the crowd in giving praise.
247. I have threatened to get even with a person who has crossed my will.
248. I enjoy teasing people just to get a response out of them.
249. I hesitate to speak up when people vigorously attack my cherished convictions.(N)
250. I find it easy to ask a member of the opposite sex to dance with me.
251. I am greatly disturbed by an audience that heckles me when I am making a speech.(N)
252. It is easy for me to heckle a speaker along with the rest of the audience.
253. I am so embarrassed when a friend uses abusive language in my presence that it is impossible for me to reprimand him.(N)
254. I am not self-conscious about whispering to a friend during a lecture.
255. I get extremely nervous when talking to a member of the opposite sex whom I like very much.(N)
256. I like to talk to friends about tricks I have played on others.
257. I should be hesitant about arguing with a friend about the payment to me of a small loan.(N)
258. My throat muscles do not become tired even though I speak for some time.
259. I like to call people names to vent my spleen.
260. I reprimand a person of my own sex who has pushed ahead of me in line where I have been waiting a long time.
261. If a speaker's stand is on the platform, it is much easier for me to give a public speech.(N)
262. I am flustered when I am given credit by mistake for some achievement.(N)
263. I am irritated by people who try to use high pressure sales methods on me.(N)
264. When I see someone in a public place who I think I have met or known, I inquire of him whether we have met before.
265. I should rather submit quietly to the demands of an enemy than ask for mercy.(N)
266. I find it easy to supply a word to another who is groping to express himself in an informal speech.

SPEECH EXPERIENCE INVENTORY

Name..... Date..... Sex..... Age.....

READ CAREFULLY

Look over the following list of speech experiences and compare yourself with other people of your own age on what in your judgment is the relative frequency of your speech experience in each case as compared with the frequency of this experience by others. Each statement is followed by a series of five statements which are to serve as a key in recording your judgment. The key words are to be interpreted as indicating the frequency suggested by the quantitative words or phrases to be found on the line below each statement. Keep the key words in mind and check the blank space at the left of the key phrase which indicates the relative frequency of this type of speech experience in your case. CHECK ONE OF THE SPACES BELOW EVERY STATEMENT.

1. Have you acted as spokesman or representative of a group in a council?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
2. Have you participated in classroom debates?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
3. Have you made speeches of entertainment such as after-dinner speeches?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
4. Have you used speech in carrying out a ceremonial ritual such as initiation ceremonies?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
5. Have you given commands as an officer, either in play or otherwise?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
6. Have you interviewed an important person for information?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
7. Have you presented some plan or proposition to a group and argued for its acceptance?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
8. Have you solicited friends for funds for an organization?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
9. Have you solicited friends to join an organization?
   ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
10. When criticism is in order, have you criticized the performances of others?
    ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
11. Do you speak up to present your point of view in a business meeting or forum?
    ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
12. Have you made talks at club meetings?
    ...Seldom or never ...Quite infrequently ...Average ...Quite frequently ...More frequently than most people.
13. Have you solicited strangers to gain support for a cause in which you are interested?
14. Have you made speeches at pep meetings?
15. Do you participate in informal group discussion?
16. Do you go out of your way to introduce a friend?
17. Have you directed others at work on a project?

18. As a child, did you memorize verses to speak at school programs?
19. Have you participated in school plays?
20. Were the parts in plays or pieces you have memorized relatively long?
21. Have you been a secretary and read the minutes of previous meetings?
22. Have you coached a team, play or contestant?
23. Do you argue with friends or relatives to get them to see your point of view?
24. Have you served as chairman of a meeting?
25. Have you made oral book reports to a class or group?
26. As a child did you memorize pieces to speak at church programs?
27. Have you memorized poetry or prose for recitation in school?
28. Have you served as president and conducted the meetings of a group?
29. Have you sold tickets?
30. Have you made talks on religious or other inspirational topics?
31. Have you been an organizer of a club or other group?
32. Have you made talks to demonstrate an object or process?
33. Have you acted as an usher in a large crowd?
34. Did you tell stories to entertain others when a child?
35. Do you talk to fill up pauses in a conversation?
36. Do you ask questions in discussions and forum meetings?
37. Have you organized and led games at social meetings?
38. Do you discuss the books and magazines you read?
39. Have you been toastmaster or master of ceremonies at a public function?
40. Have you acted as a judge or referee?
41. Do you question people who hold different beliefs to get their points of view?
42. Do you talk about your hobbies?
43. Do you make remarks "to get a rise" out of others?
44. Do you engage strangers in conversation to pass the time?
45. Have you read stories aloud for the benefit of another person or group?
46. Do other people come to you to talk over their problems?
47. Have you secured signers to a petition?
48. Have you served as a guide to a party of strangers?
49. Were you encouraged to talk as a child in the home?
50. As a child did you memorize verses to speak to company?
51. Have you been a member of a glee club?
52. Have you taken principal parts in musical shows?
53. Have you done public solo singing?
54. Do you volunteer to recite in class?
55. Have you been a cheer leader?
56. Do you frequently tell jokes?
57. Have you solicited strangers for funds for an organization?
58. Have you participated in "tag day" sales on a public street?
59. Have you sold newspapers or magazines on the street?
60. Have you canvassed from door to door to sell an article?
61. Do you hold long conversations with friends over the telephone?
62. Have you interviewed prospective employers for positions?
63. Have you participated in oratorical contests where you memorized and presented another person's oration?
64. Have you participated in oratorical contests where you presented your own oration?
65. Have you participated in declamation contests?
66. Have you participated in debate contests?
67. Have you participated in extemporaneous reading contests?
68. Have you participated in extemporaneous speaking contests?
69. Have you ever acted as an auctioneer?
70. Have you argued with a judge or referee about a decision?
71. Have you had private lessons in speaking?
72. Have you taken other speech courses?
73. Have you performed tricks for a group?

74. Have you taught a class?
75. Have you made speeches about places you have been?
76. Do you speak up in complaint when you feel you haven't been treated rightly?
77. Have you induced tradesmen to render additional service or lower the price on an article by arguing?
78. Do you participate in the discussion in your family?
79. Do you tease friends?
80. Do you speak up to help another person out of trouble?
81. Do you talk over your problems with members of your family?
82. Do you plead with a person in authority to let you do something you want to do?
83. Have you ever solicited advertising?
84. Have you entertained people in a reception line?
85. Have you ever clerked in a store?
86. As a child did you get other children to play your games?
87. Have you solicited material such as newspapers, clothing, etc., for a charity sale?
88. Have you managed an athletic team or sales group?
89. Have you directed an orchestra, band or glee club?
90. Do you read poetry aloud to self or others?
91. Have you volunteered a prayer when it is requested?
92. Have you argued before a jury, judge or other arbitrator?
93. Do you seek to correct people who misunderstand you?
94. Do you try to make "snappy comebacks" in discussion?
95. Do you mimic or imitate others for amusement?
96. Do you razz the contestants in a game?
97. Do you encourage persons who are downcast or in trouble?
98. Do you laugh heartily at a good joke?
99. Have you made it a point to show how angry you were to get your way?
100. Do you hint to try to get something you want without asking for it?

S. C. SCALE

Name..... Sex..... Age..... Date.....

On this page and the following pages you will find a number of statements about different forms and characteristics of speech. Read each statement carefully and indicate the extent to which you disagree or agree with the statements by placing a check in the blank before the appropriate word or phrase under each statement. Make an attempt to avoid the "Moderate" reaction by checking the "Agree" or "Disagree" items whenever you feel that you possibly can.

1. People who try to speak without previous considerations of what they are to say show how foolish they are.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
2. Persons who criticize the work of a superior are tactless.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
3. Persons who try to say unusual things to get themselves noticed are egotistical.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
4. Persons who tell jokes on their friends in public show poor taste.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
5. Persons who use figures of speech in their talks like to show off.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
6. Persons who talk about their friends in public are gossipers.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
7. Persons who like to act in costume and make-up show a primitive desire to exhibit themselves.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree

8. A person who corrects the mistakes of another is apt to hurt his feelings.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
9. A person who makes up excuses for not accepting an invitation is dishonest.
   ....Disagree ....Moderately disagree ....Moderately agree ....Agree
10. Persons who impose their troubles on their friends are unkind.
    ....Disagree ....Moderately disagree ....Moderately agree ....Agree
11. Persons who tell jokes on themselves show how foolish they are.
    ....Disagree ....Moderately disagree ....Moderately agree ....Agree
12. Persons who are always trying to argue about something are socially irritating.
    ....Disagree ....Moderately disagree ....Moderately agree ....Agree
13. Persons who like to make caustic remarks show smug self-satisfaction.
14. Persons who like to play competitive conversational games are persons who want to win to satisfy a craving for superiority.
15. Persons who use literary references and quotations when speaking are merely trying to put on airs.
16. Persons who like to argue about religious subjects are self-righteous.
17. Persons who like to speak from a tall platform are usually pretty conceited.
18. Persons who persist in demands for service from tradespeople are lacking in social sympathy.
19. Persons who engage strangers in conversation are bold.
20. Persons who turn down worthy requests for money are socially inconsiderate.
21. Persons who insist on asking questions in public discussion show a lot of nerve.
22. A person of little fame in the company of famous people should show that he knows his place by keeping quiet.
23. Persons who use a great deal of energy in their social contacts are pretty egotistical.
24. Persons who frequently ask for help are social bores.
25. Persons who talk very glibly are usually pretty shallow.
26. Persons who like to say things which will shock others are tactless.
27. Persons who continually talk about serious subjects are trying to show off.
28. One who asks a famous person for time for a formal interview is usually socially inconsiderate.
29. Persons who use a great many gestures when making a speech are trying to be "flashy."
30. A person who argues to get one to change his personal beliefs is not minding his own business.
31. Persons who do a great deal of wisecracking are usually conceited.
32. Persons who like to talk about errors of others are gossipers.
33. A person who tries to do something which he has never tried before is usually pretty egotistical.
34. A person who tries to get ahead of his fellows in winning social recognition is a poor sport.
35. Persons who talk in a loud voice are usually trying to bluster their way along.
36. Persons who persist in asking a great many questions are irritating meddlers.
37. Persons who try to match wits with dictatorial and domineering people merely show how foolish they are.
38. Persons who express highly positive and unfavorable opinions about others are intolerant.
39. Persons who talk about their own work are pretty narrow.
40. A person who tries to squelch anyone who teases him is socially inconsiderate.
41. Persons who make themselves conspicuous in public situations are pretentious.
42. A person who criticizes the members of his family in public is disloyal.
43. Persons who talk about themselves are braggarts.

44. Persons who report code or law violations of others are tattlers.
45. Persons who try to speak according to principles that they have studied are usually affected.
46. Persons who try very hard to make friends show lack of dignity.
47. A person who shows his feelings in his voice and expression is too emotional.
48. A young person who talks a lot when with his elders shows his disrespect for them.
49. Persons who like to make talks for pep teams show how shallow they are.
50. Persons who mimic or characterize others are socially inconsiderate.
51. Persons who dream about making impressive speeches are conceited.
52. A person who makes inquiries about one's personal affairs is not minding his own business.
53. Persons who speak up impulsively in a meeting are careless in their speech.
54. Persons who talk about their hobbies are usually very boring.
55. A person who bluffs to "get by" is deceitful.
56. A person who puns engages in a form of humor which is not generally enjoyable.
57. Persons who talk back when harshly spoken to show poor breeding.
58. A person who makes a fuss over minor inconveniences shows poor taste.
59. Persons who accept praise without showing humility are vain.
60. A person who pushes himself ahead to get along in life is unfair.
61. Persons who publicly confess their mistakes show how foolish they are.
62. Persons who don't apologize when they violate a conventional code are discourteous.
63. Persons who can't speak without making mistakes in grammar are apt to be careless in everything they do.
64. A person who complains when someone gets the better of him is a poor loser.
65. Persons who like to take an active part in the rituals of a club or fraternity are trying to hide their real selves behind a false front.
66. Persons who make remarks in public on subjects about which people are sensitive are not diplomatic.
67. A person who compliments another merely to get something out of him is a hypocrite.
68. Persons who solicit aid for causes in which they are especially interested are social pests.
69. Persons who ask for special favors are generally pretty selfish.
70. One who tries to sympathize with another who has lost a close relative is an intruder.
71. People who like to memorize and recite verses are peculiar.
72. Persons who persist in trying to get what they want even though they must make a scene to do so show poor taste.
73. Persons who take the initiative in getting acquainted in a large group are presumptuous.
74. Persons who expect one to engage in small talk are social bores.
75. A person who speaks with a great deal of force is insincere.
76. Persons who persist in looking one squarely in the eyes while speaking are overbearing.
77. A person who responds to unjustified criticism cheapens himself.
78. Persons who mention indelicate subjects in conversation are repulsive.

Chapter III

Reliability of the Scales and Item Validation.

The first step in the evaluation of any measuring instrument is the determination of its reliability. Reliability is the term used in testing to indicate the extent to which a test yields scores which are consistent for individuals in a group.[12, 13] In order to obtain a reliable test of the paper and pencil type it is usually necessary to have a fairly large number of items. But it is also desirable to keep the test as short as possible so that it will require no more of the subject's time in taking it than is necessary. The length of the test then will be determined approximately by the number of items necessary to secure a measuring instrument with the desired reliability.

In reducing the length of a preliminary test form the items to be retained are those which contribute most to the differentiating power of the test. The methods used in determining the relative differentiating value of test items are known as the methods of item validation or item analysis.[14, 15] In evaluating test items, two methods were used in this project. They are known as the method of internal consistency, and the method of an outside criterion. In using the method of internal consistency there are several statistical methods which may be employed. The one used here may be called the Critical Ratio Method. This method made possible the combination of the internal consistency and outside criterion methods used in this project.

The method used in selecting criterion groups of superior and inferior speakers involved the selection of papers in the upper or lower third of the distribution on the particular studied scale. Only those papers were selected for all of the later criterion groups on which a number of outside criteria were available and supported the classification suggested by the scale differences. Earlier criterion cases were selected by use of the scale scores and instructors' rating on Speech Attitudes only. Students who took the test had also taken the Speech Experience Inventory, an objective case history form and had been rated by their instructors on a nine point graphic rating scale on the personal qualities in speaking we designate "Speech Attitudes" and "General Effectiveness" in speaking. The ratings by in-

[12] Bingham, W. V., *ibid.*, 214ff.

[13] Guilford, J. P., *Psychometric Methods,* McGraw Hill, 1936, 411ff.

[14] Sletto, R. *ibid.,* Chapter I.

[15] Lang, J. A. and Peter Sandiford, *The Validation of Test Items,* Dept. of Educ. Res., University of Toronto, Toronto, Canada, 1935.

structors were made only after hearing the student in a speech class for at least eight weeks. In the case of college groups these ratings by a group of two or three teachers for each student were used in some groups.

The rating of the teachers in Groups 3 and 5 (final validating groups) was done on the Minnesota Speech Problem Survey Scale. A copy is included on the following page. The directions to the teachers for the rating process were as follows:

DIRECTIONS FOR RATING STUDENT PERFORMERS

"The rating scale and check list is to be filled out by the teacher in light of everything he knows of the student. It will be best if the teacher starts, at least, to fill it out and carry it as far as possible while the student is performing or while making a talk before the class. A speech assignment in which the student makes a three minute speech about something he believes is recommended. If you do not have time to do all the checking as they speak, finish it after class before sending them in to me. I have found that the more carefully this checking is done, the more successful the study is for any one teacher. Directions for checking and rating are as follows: Check each fault observed or known to characterize the student from his past performances and encircle the number which indicates his relative achievement in that general area. If you feel that he has a seriously handicapping problem in the area, encircle a 1, 2, or 3, if you judge him to be relatively free from serious faults and also a person who demonstrates some degree of skill in the area, encircle the 7, 8 or 9. BE SURE TO RATE THE STUDENT SOMEPLACE BETWEEN 1 AND 9 FOR EACH AREA. Try to get as great a range of ratings in the distribution as the particular group may justify. Although a normal distribution is not requested, as wide a range of ratings as is consistent with the facts is desirable. There need be no direct relationship between the items checked in the check list and the ratings in the general areas. A student may be checked as having one or more faults in an area and still possess a relative amount of skill in that area. Be sure to check as many faults in the check list as you judge to characterize the performance in that area."

For groups 3 and 5, a student self-rating on "General effectiveness" in speaking was available from the case history form. This item was given less weight than others in selecting cases. The item read as follows:

"Rate yourself for general effectiveness in speaking on the line

UNIVERSITY OF MINNESOTA
SPEECH PROBLEM SURVEY SCALE

Name..... School and Course.....
(Print, last name first)

Sex.... Age.... Year in School: Fresh., Soph., Jr., Sr., Grad. (Encircle one)

	Has A Problem			Fair But Ineffective			Degrees Of Skill		
A. GENERAL PERSONALITY TRAITS..	1	2	3	4	5	6	7	8	9
1. Affected	7. Apologetic								
2. Listless	8. Withdrawing								
3. Too aggressive	9. Over-friendly								
4. Silly	10. Aloof								
5 Too serious	11. Tactless								
6. Non-adaptive	12. Antagonistic								
13.	14.								
B. EMOTIONAL ADJUSTMENTS	1	2	3	4	5	6	7	8	9
1. Trembling	7. Poor eye contact								
2. Dry mouth	8. Mental confusion								
3. Sweating	9. Strained voice								
4. Fidgety	10. Hurried speech								
5. Short breath	11. Tense face								
6. Blushing	12. Tense body								
13.	14.								
C. VOCAL ACTIVITY	1	2	3	4	5	6	7	8	9
1. Monotonous	12. Breathy								
2. Muffled	13. Harsh								
3. Too fast	14. Thin								
4. Too slow	15. Shrill								
5. Weak	16. Nasal								
6. Loud	17. Uncontrolled								
7. High pitched	18. "Anda"—"Ugh" habit								
8. Low pitched	19. Poor articulation								
9. Patterned	20. Foreignisms								
10. Poor stress	21. Lisps								
11. Stilted	22. Stutters								
23.	24.								
D. PHYSICAL ACTIVITY	1	2	3	4	5	6	7	8	9
1. Inanimated	7. Random								
2. Weak	8. Not integrated								
3. Too vigorous	9. Mechanical								
4. Too relaxed	10. Poor postures								
5. Too tense	11. Mannerisms								
6. Unvaried	12. Careless in appearance								
13.	14.								
E. LANGUAGE AND DICTION	1	2	3	4	5	6	7	8	9
1. Ungrammatical	3. Poor vocabulary								
2. Poor sentences	4. Mispronunciations								
5.	6.								
F. SPEECH CONTENT	1	2	3	4	5	6	7	8	9
1. Not clear	4. Not interesting								
2. Insufficient	5. Not significant								
3. Inaccurate	6. Lacks originality								
7.	8.								
G. GENERAL EFFECTIVENESS IN SPEECH	1	2	3	4	5	6	7	8	9

below. Think of yourself in comparison with others of your own age and do not permit pride or humility to keep you from giving yourself an extreme rating if in your opinion you are very poor or very good in speech."

Very Poor		Poor		Moderately Effective		Good		Very Good

In selecting the poor speakers for what we shall designate the Quartile One criterion group for the attitude scale item analysis, a test subject had to be in the lower third of the distribution on the Attitude Scale and also at least in the lower half of three out of four outside criteria. Students selected as good speakers or for what we shall designate as the Quartile Four criterion group were in the upper third of the distribution on the Attitude Scale and also in at lease the upper half of three out of the four outside criteria. In most cases they were comparatively high or low on all criteria. In selecting cases for the criterion groups which were rated by their teachers as poor or effective speakers, who rated themselves in the same groups and who were differentiated on the scales as disliking or enjoying speech and as having little or much speech experience, it was believed the assumption was fairly safe that these individuals were poor and good speakers respectively. This practice may be justified by Symonds [16] who says, "Reliability is achieved by heaping up observations, ratings, tests, questions, measures." The criterion groups are designated quartile groups because they fell within the upper and lower quartiles of combined criterion values.

The item analyses for these scales have been done on several groups of subjects. It was deemed advisable to compute item values separately for men and women, as well as for high school and college groups, in order to validate the scale for the various groups. In the process of validation several different groups have been used. Not all the sub-groups have been large, although all the totals and combined groups have been large enough to achieve positive results on retained items. Although separate analyses for the several groups entails more work than would the analyses of one large group for each class of subjects, the repeated analyses of smaller groups has served to further the evidence on reliability of the data by the re-

[16] Symonds, P., *Diagnosing Personality and Conduct*, p. 5.

peated demonstration of consistent significant differences. It has, moreover, made possible an analysis of items when they have appeared in different forms of the scales.

The number of subjects used in the process of experimentation with this scale is indicated by Table I. The various high school and college groups are given numbers which will be used in referring to them throughout this report. Some groups are included which were not used in item analysis but are numbered here for the sake of completeness in the table. The experimental uses to which these groups were put will be indicated later.

TABLE I

SUBJECTS IN VARIOUS EXPERIMENTAL GROUPS

Group 1, College	252		1934–35
Group 2, College	375		1935–36
Group 3, College	600		1936–37
Group 4, High School	382	(5 schools)	1935–36
Group 5, High School	626	(8 schools)	1936–37
Group 6, High School	200		1935–36
Group 6, College	200		1935–36
Group 7, College	400		1937–38
Group 8, High School	670	(13 schools)	1937–38

The ratio of men to women in high school groups ran about 5 to 7 and in college groups 6 to 5. Some additional cases were secured on the final forms of the Attitude Scale and Experience Inventory to enable the computation of norms for these forms on 2500 cases each. All college cases were students at the University of Minnesota, and most of them were sophomore Speech students. The High school cases were students from 26 different Minnesota high school populations of various sizes and parts of the state. The mean grade for the high school groups was just a bit above the eleventh grade. The years in which data for the various groups were collected are indicated in the last column.

The size and nature of the criterion groups used in various forms of the attitude scale are indicated by Table II. In all, 70 high school

TABLE II

SIZE OF CRITERION GROUPS FOR SPEECH ATTITUDE SCALE

	MEN Q1	MEN Q4	WOMEN Q1	WOMEN Q4	MEN AND WOMEN Q1	MEN AND WOMEN Q4
Form A College (Group 1)	20	20	20	20	40	40
Form C College (Group 2)	20	20	20	20	40	40
Form C High School (Group 4)	15	15	15	15	30	30
Form F College (Group 3)	40	40	40	40	80	80
Form F High School (Group 5)	55	55	55	55	110	110
Total for Form F Items	150	150	150	150	300	300

and 80 college students were used in each quartile for both men and women. The combined quartile differences are based on 300 cases in each quartile. These groups were combined in various ways in the computation of item differences as will be indicated later. The group number designations indicate the groups numbered in Table I from which they were drawn.

The sizes of the Speech Experience Inventory quartile groups are indicated in Table III. In all 240 quartile one speakers were compared with 240 quartile four speakers.

TABLE III

SIZE OF CRITERION GROUPS FOR SPEECH EXPERIENCE INVENTORY

	MEN Q1	MEN Q4	WOMEN Q1	WOMEN Q4	MEN AND WOMEN Q1	MEN AND WOMEN Q4
Form A College (Group 2)	15	15	15	15	30	30
High School (Group 4)	10	10	10	10	20	20
Form C College (Group 3)	40	40	40	40	80	80
High School (Group 5)	55	55	55	55	110	110
Total for all Form C Items	120	120	120	120	240	240

The criterion groups for the S. C. scale item analysis comprised 30 men and 30 women in each quartile for the high school and 20 men and 20 women in each quartile for the college groups. Thus the combined quartile differences were computed on the basis of 100 cases in each quartile. The cases for the S. C. Scale analysis were drawn from group 3 and 5.

Six tables have been prepared to illustrate the significance of the differences in these quartile groups on the criteria used to differentiate them. The tables for all scales are based on the data for criterion groups 3 and 5. In the case of groups 1, 2, and 4 only teachers' ratings on speech attitudes was used as an outside criterion. This did enable the selection of somewhat more atypical cases on the test form under analysis. Data on the scale values for the S. C. Scale and the self-rating for general effectiveness in speech from a nine point graphic rating scale are included in each table. The relative differentiating power of the two different types of items in both the Speech Attitude Scale and the S. C. Scale are also included although these criteria were not used in selecting cases. In each table the critical ratios for the test under analysis are the highest because the criterion of internal consistency was given more weight in selecting cases than were the outside criteria. The outside criteria which did form a part of the plan of case selection all show significant differences with the exception of the criterion of teacher rating on speech attitudes in the

S. C. Scale group 3 and the self-ratings on S. C. Scales. These differences are large enough, however, to be significant in most cases. The S. C. Scale scores are also significant in most cases.

The data on the "minus" or negatively worded and the "plus" or positively worded items in Tables IV and V are included to indicate their relative differentiating power. The two types of items differentiate about equally well in this scale, although students get slightly higher scores on the positively worded items.

In Tables VIII and IX the data on the comparative differentiating power of the egocentric and sociocentric items indicate little difference in their differentiating power for this group. All groups show higher scores on the sociocentric items than on the egocentric items.

Table X is included to enable a comparison here of the various criterion group scores with the scores for the entire group. In most cases the criterion group scores vary about equally in their respective directions from the mean. The scores on the Speech Attitude Scale and the Speech Experience Inventory are based upon the final distributions of all available cases for these scales. The S. C. Scale scores are Form A of that scale. The rating scores are those actually derived from work with these particular groups.

After the selection of criterion cases for each group, the task of item evaluation was begun. The distribution of scores over the five point scale for each item was plotted for both sex quartiles in each group. The mean scores on each item for each group, and the critical ratios of the difference between these mean scores were computed. The process of computation of critical ratios was facilitated by the use of a formulae which greatly reduced the amount of mathematical work involved. Because the use of this formulae has been explained in detail by Sletto,[17] it will be unnecessary to treat it further here.

The primary object of this step in the project has been to determine which items on the scales differentiate the superior speakers from the inferior speakers in each sex and school group. Secondary objects have been to decrease the length of the test and to validate the a priori score values attached to the multiple choices for each item. The length of the test may be safely reduced by eliminating items which do not show significant differences between the two groups. If the superior speech group should get a consistently lower score on an item than is registered by the inferior group, it would mean that the item had been scaled incorrectly, and that the scale

[17] Sletto, *ibid.*, Chapter I.

TABLE IV

CRITERION VALUES FOR ATTITUDE SCALE CRITERION GROUP 3

	Quartile I				Quartile IV				Critical Ratios	
	Men		Women		Men		Women			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Men	Women
Speech Attitude Scale Total	253.50	25.00	250.50	25.30	358.00	24.20	337.95	25.30	18.50	15.45
Speech Attitude Scale, Minus Items	122.60	15.90	124.90	18.30	177.50	13.60	165.35	18.00	16.87	9.62
Speech Attitude Scale, Plus Items	130.90	16.60	125.60	15.30	180.50	19.20	172.60	15.40	12.43	13.20
Speech Experience Inventory	97.60	15.55	98.30	17.85	142.30	29.20	138.70	24.90	8.60	8.42
S. C. Scale	178.50	25.00	180.20	36.20	152.50	25.35	149.00	25.40	4.59	4.45
Teacher rating on Speech Attitudes	4.25	1.25	4.36	1.24	7.03	1.36	6.39	1.34	9.59	7.00
Teacher rating on General Effectiveness	4.63	1.02	4.90	.96	7.27	1.13	6.53	1.33	11.00	6.27
Self-rating on General Effectiveness	3.88	1.32	3.65	1.35	6.53	1.09	6.40	.97	9.81	10.58

TABLE V

CRITERION VALUES FOR ATTITUDE SCALE CRITERION GROUP 5

	Quartile I				Quartile IV				Critical Ratios	
	Men		Women		Men		Women			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Men	Women
Speech Attitude Scale Total	239.55	28.20	232.50	25.60	328.50	22.10	340.20	25.20	18.63	22.44
Speech Attitude Scale, Minus Items	118.00	22.25	113.10	17.35	162.20	16.75	171.30	17.45	12.65	17.53
Speech Attitude Scale, Plus Items	121.55	22.25	119.40	17.10	166.30	13.65	168.90	14.35	17.16	16.20
Speech Experience Inventory	96.50	19.90	95.40	17.65	130.60	17.65	134.80	27.25	9.45	9.04
S. C. Scale	187.20	31.70	187.70	24.80	167.10	32.70	175.70	26.45	3.26	2.45
Teacher rating on Speech Attitudes	3.77	1.21	3.65	1.35	6.36	1.59	6.80	1.30	9.59	12.60
Teacher rating on General Effectiveness	3.48	1.45	4.19	1.42	6.64	1.19	7.17	1.00	12.64	12.96
Self-rating on General Effectiveness	4.80	1.45	4.77	1.95	6.18	1.41	6.78	1.00	5.11	6.93

TABLE VI

CRITERION VALUES FOR EXPERIENCE INVENTORY CRITERION GROUP 3

	Quartile I				Quartile IV				Critical Ratios	
	Men		Women		Men		Women			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Men	Women
Speech Experience Inventory	90.70	11.60	85.50	10.00	157.50	15.20	148.30	15.10	22.27	22.19
Speech Attitude Scale Total	263.25	39.72	253.20	33.20	341.40	39.75	314.35	39.80	8.79	7.47
S. C. Scale	171.10	29.15	165.00	25.80	145.00	25.15	159.20	29.85	4.29	.94
Teacher rating on Speech Attitudes	4.64	1.51	4.18	1.53	7.03	1.35	6.67	1.75	8.24	6.92
Teacher rating on General Effectiveness	5.00	1.19	4.77	1.00	7.24	1.25	6.90	1.33	8.30	8.19
Self-rating on General Effectiveness	3.94	1.48	3.60	1.16	6.15	1.02	5.20	1.32	7.89	5.71

TABLE VII

CRITERION VALUES FOR EXPERIENCE INVENTORY CRITERION GROUP 5

	Quartile I				Quartile IV				Critical Ratios	
	Men		Women		Men		Women			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Men	Women
Speech Experience Inventory	84.10	10.90	87.20	11.40	146.90	17.40	150.60	16.80	22.19	23.92
Speech Attitude Scale Total	248.40	32.15	243.60	42.30	308.40	37.50	324.45	44.80	9.05	9.73
S. C. Scale	192.50	24.70	186.80	23.70	167.00	27.10	170.60	25.60	5.20	3.45
Teacher rating on Speech Attitudes	3.88	1.36	3.56	1.54	6.16	1.47	7.21	1.25	8.44	13.52
Teacher rating on General Effectiveness	3.86	1.66	4.00	1.46	6.84	1.23	6.92	.96	10.64	12.70
Self-rating on General Effectiveness	4.69	1.30	4.92	1.60	6.00	1.67	6.79	1.07	4.52	7.19

TABLE VIII
CRITERION VALUES FOR S. C. SCALE CRITERION GROUP 3

	Quartile I				Quartile IV				Critical Ratios	
	Men		Women		Men		Women			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Men	Women
S. C. Scale Total	190.00	20.85	186.00	17.80	132.00	14.20	132.50	10.90	10.25	11.41
S. C. Scale Egocentric Items	87.00	11.00	80.20	9.60	60.25	7.40	60.25	10.20	8.99	6.49
S. C. Scale Sociocentric Items	103.00	11.35	105.80	15.40	71.75	9.64	72.25	12.50	9.82	7.72
Speech Attitude Scale Total	258.75	23.60	253.05	31.60	338.50	34.50	314.55	31.65	8.55	6.15
Speech Experience Inventory	94.50	11.85	101.50	16.05	143.50	24.50	130.00	25.00	8.06	4.30
Teacher rating on Speech Attitudes	4.41	1.42	5.00	1.21	6.78	1.08	6.21	1.75	5.93	2.57
Teacher rating on General Effectiveness	4.82	1.25	5.53	1.15	7.00	.77	6.60	1.08	6.61	3.06
Self-rating on General Effectiveness	3.30	1.22	4.06	1.25	6.48	1.21	5.36	1.11	8.15	3.51

TABLE IX
CRITERION VALUES FOR S.C. SCALE CRITERION GROUP 5

	Quartile I				Quartile IV				Critical Ratios	
	Men		Women		Men		Women			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Men	Women
S. C. Scale Total	207.00	19.55	210.70	14.35	145.30	11.70	141.00	14.30	14.98	18.10
S. C. Scale Egocentric Items	97.95	15.75	96.80	13.80	63.30	16.40	64.80	13.75	77.89	9.23
S. C. Scale Sociocentric Items	109.05	14.10	113.90	12.80	82.00	15.10	76.20	15.50	6.68	10.69
Speech Attitude Scale Total	246.60	30.90	246.95	36.60	313.80	39.50	327.15	41.90	7.33	7.90
Speech Experience Inventory	93.70	16.70	104.00	20.50	130.70	30.20	135.30	32.10	5.85	4.52
Teacher rating on Speech Attitudes	4.38	2.06	4.32	1.86	6.57	1.87	6.23	1.97	4.29	3.49
Teacher rating on General Effectiveness	4.16	1.96	4.40	1.56	6.52	1.75	6.43	1.34	5.02	5.49
Self-rating on General Effectiveness	4.89	1.44	5.12	1.43	5.98	1.47	6.02	1.32	2.45	2.43

Self-rating on General Effectiveness	4.89	1.44	5.12	1.43	5.98	1.47	6.02	1.32	2.45	2.43

TABLE X

MEAN CRITERION VALUES FOR ALL SUBJECTS IN GROUPS NUMBER 3 AND 5

	GROUP NUMBER 3				GROUP NUMBER 5			
	MEN		WOMEN		MEN		WOMEN	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
Speech Attitude Scale Total	307.22	43.93	296.10	45.90	287.91	40.35	286.86	44.70
Speech Experience Inventory	124.47	29.65	123.62	29.00	118.07	28.00	119.22	25.60
S. C. Scale Total	162.40	28.10	161.80	25.60	178.30	34.25	183.40	27.10
Teacher rating on Speech Attitudes	5.72	1.51	5.69	1.88	5.32	1.95	5.64	1.92
Teacher rating on General Effectiveness	5.90	1.53	5.90	1.39	5.53	1.89	5.66	1.67
Self-rating on General Effectiveness	5.03	1.37	4.75	1.62	5.25	1.61	5.44	1.85

values of the item should be reversed. A critical ratio of 3.00 has been accepted as the point of determination of the significance of an item. In some cases items have been retained in the final scale where the critical ratio for a sub-group or sub-group combination was less than 3.00, although no item was retained if it produced a critical ratio of less than 3.00 in the two final combinations of data from various groups.

Table XI contains the critical ratios for all items of the Speech Attitude Scale. The figures for the first 96 items are the critical ratios for the items retained in Form F of the scale. The data on items 97 to 192 represent the significance of the differences on items in Form C which were not used in Form F. Items numbered 193 to 266 are the items of Form A not used in Form C.

The blank spaces in column 1 are the result of the fact that these items were added to Form C after the work with Form A. The first five columns for the first 96 items represent the computations for the five separate groups. College and high school differences may be observed from these separate computations. The next four columns show differences in scores of the men of Quartile I in Groups 1, 2 and 4, when plotted together and compared with Quartile IV in Groups 1, 2 and 4, and similar comparisons for men in groups 3 and 5 and the women in both these groups. Items were retained only when they indicated a high probability that they were significant for both college and high school groups and for men and women. The last two columns indicate the critical ratios for all Quartile I cases in the first three groups compared with Quartile IV cases in these groups, and a repetition of this comparison for groups 3 and 5. It may be seen that all items retained in Form F show absolute statistical significance for both criterion group combinations. In spite of the fact that the items of little or no differentiating power have been eliminated the coefficient of correlation between the critical ratios of these two columns is +.58. Some of the differences in the critical ratios for these two groups may have arisen from the fact that they are based on different forms of the scale in which the items appeared in different orders. The mean critical ratio for the combination of groups 1, 2 and 3 is 6.76 and for groups 3 and 5 is 7.22. Since the second combination contained more cases, other factors being equal, the critical ratios for these groups should be larger.

A comparison of the mean critical ratios on the first 96 items for men and women in groups 3 and 5 indicates that the scale differen-

TABLE XI

CRITICAL RATIOS FOR CRITERION GROUPS ON SPEECH ATTITUDE SCALE

Item Number	College Group 1	College Group 2	High School Group 3	High School Group 4	High School Group 5	Men Groups 1–2–4	Men Groups 3–5	Women Groups 1–2–4	Women Groups 3–5	All-Combined Groups 1–2–4	All-Combined Groups 3–5
1.		5.40	6.44	5.13	6.83	3.44	7.27	4.36	6.32	5.93	9.20
2.	2.94	3.06	2.95	3.77	2.17	4.24	2.10	4.10	2.55	5.92	3.09
3.	7.09	7.82	5.14	2.61	7.41	6.19	5.05	5.90	5.50	8.54	8.58
4.	6.43	4.80	5.47	5.03	4.82	8.25	3.94	5.93	6.59	9.80	7.00
5.	1.33	4.12	3.52	6.45	7.12	3.55	4.13	5.78	6.41	6.66	7.85
6.	6.67	5.82	9.15	8.00	7.35	8.20	7.65	6.94	6.19	11.30	9.40
7.	1.60	5.55	2.62	4.02	4.05	2.20	3.05	3.09	3.95	3.30	4.40
8.	5.25	8.28	5.95	2.78	4.05	6.09	5.90	6.85—	4.41	8.66	6.35
9.	4.13	3.07	3.83	2.05	5.47	3.66	4.75	4.31	4.62	5.26	7.57
10.	2.38	3.60	4.35	4.54	5.94	4.00	6.05	4.35	4.95	5.40	8.42
11.	3.84	12.00	5.47	7.74	7.38	6.85	7.67	8.30	5.94	10.50	9.77
12.	4.86	5.75	3.87	4.44	6.10	6.60	5.51	5.60	6.77	8.23	9.14
13.	2.97	4.03	2.59	3.88	6.38	2.80	3.48	4.25	5.05	5.33	5.93
14.	3.00	6.18	6.14	4.38	6.38	5.45	5.10	6.05	8.18	7.44	8.86
15.	5.54	3.20	7.45	2.81	5.37	4.15	6.82	2.90	6.63	5.50	8.08
16.	4.76	2.77	2.14	4.28	3.70	4.28	2.70	5.52	6.62	5.90	4.06
17.	4.75	6.37	4.59	5.62	8.05	7.70	5.81	5.77	6.84	9.00	9.70
18.	2.57	3.67	5.53	2.35	3.44	3.73	4.36	3.72	4.11	4.78	5.34
19.	4.18	4.49	6.19	2.17	2.05	5.32	2.90	2.62	4.57	6.41	4.53
20.	7.36	6.05	6.32	7.66	6.88	7.40	6.20	8.66	6.73	9.80	9.07
21.	2.76	3.40	3.45	2.73	6.05	6.40	4.75	3.04	3.35	5.51	6.07
22.	4.37	4.20	4.60	4.06	5.75	4.95	3.33	3.03	4.52	5.90	6.42
23.	1.87	5.52	5.00	2.25	3.52	3.84	2.39	3.74	4.50	5.30	5.63
24.	2.24	3.02	2.60	4.43	3.66	3.39	3.47	5.29	3.44	5.39	5.17
25.	4.86	5.08	6.11	7.93	4.62	9.02	4.45	7.41	6.10	9.40	7.00
26.	3.25	2.87	2.74	2.29	3.61	2.18	3.11	4.50	3.85	5.03	6.72
27.		7.69	5.10	3.00	7.81	4.63	6.62	5.24	6.53	7.00	6.47
28.	3.00	4.25	2.45	4.20	4.53	5.63	4.00	2.67	3.19	6.40	5.00
29.		3.87	3.41	3.42	3.24	3.91	2.78	3.56	3.35	5.32	5.08
30.	3.00	6.08	6.89	3.00	7.63	5.02	6.44	6.14	7.65	7.50	9.95
31.	3.78	4.59	4.18	2.35	4.06	6.80	5.39	2.76	3.80	6.68	6.62
32.	4.82	4.32	5.50	4.91	6.53	4.94	5.39	6.40	6.63	7.79	9.07
33.	3.88	3.63	6.67	4.36	6.47	4.74	7.72	3.80	5.57	6.01	9.85
34.	1.41	7.66	3.68	3.59	5.94	4.41	4.50	5.75	4.11	7.14	6.22
35.	4.27	2.18	3.43	3.23	3.18	3.90	3.63	4.42	3.62	5.22	5.23
36.	3.20	3.69	4.48	2.94	7.78	4.54	5.53	3.90	4.35	5.14	7.62
37.	2.19	5.23	4.29	2.43	2.89	4.74	4.10	1.90	3.05	5.57	4.73
38.	2.14	4.50	4.48	3.86	8.00	3.72	4.55	4.46	8.59	5.60	9.16
39.	4.09	4.22	1.25	2.72	3.05	5.73	1.55	3.23	2.95	6.37	3.13
40.	4.90	4.04	5.29	4.81	3.89	3.75	3.89	3.35	5.20	6.10	6.93
41.	4.16	5.29	2.42	5.86	5.40	7.63	4.32	3.34	4.14	7.27	5.77
42.	3.96	3.20	3.71	2.81	4.05	4.31	3.45	3.90	4.29	5.44	5.43
43.		4.84	5.94	4.25	6.67	4.78	6.69	4.29	5.88	6.40	7.22
44.	2.71	2.27	4.00	4.83	4.33	3.08	3.90	5.62	4.44	6.22	5.79
45.	2.62	2.67	4.48	3.66	6.00	3.26	5.10	4.38	5.37	5.06	7.85
46.	2.69	5.92	6.45	5.71	7.00	5.28	7.67	3.65	6.16	7.30	8.78
47.	3.82	3.27	4.62	2.00	3.74	4.00	2.81	4.44	5.68	5.99	4.31
48.	4.40	3.88	2.38	3.42	7.17	5.11	5.80	3.95	4.38	6.44	6.87
49.	4.29	4.83	3.05	2.72	3.89	4.43	3.53	4.76	3.45	6.32	4.47
50.		3.00	2.67	3.36	5.06	3.44	3.06	2.65	3.89	4.37	4.77
51.	4.91	4.13	3.55	2.59	4.44	4.95	3.33	4.70	4.00	6.86	5.34
52.	3.74	2.60	3.68	2.19	5.47	4.30	4.05	4.76	6.05	4.63	6.27
53.	3.79	3.95	6.74	3.34	4.05	5.68	4.85	2.82	4.30	6.77	6.50
54.	3.78	4.04	5.90	2.74	7.50	3.57	7.17	6.32	8.18	6.47	9.85
55.		3.66	7.16	4.14	7.36	3.27	7.88	4.68	7.27	5.51	8.69

TABLE XI—Continued

Item No.	College Group	College Group	High School Group	High School Group	Men Groups	Men Groups	Women Groups	Women Groups	All Combined Groups	All Combined Groups
56.	3.85	3.27	5.50	2.13	3.33	4.08	4.94	3.60	4.72	6.60	6.31
57.	2.78	5.04	3.95	4.19	3.89	3.29	3.05	3.86	6.65	5.35	6.69
58.	5.97	3.28	3.13	1.71	3.10	4.07	3.60	3.12	2.77	5.12	4.33
59.	3.60	4.03	5.57	4.54	7.00	3.18	5.84	5.20	6.35	6.80	9.26
60.	5.28	7.10	5.16	5.94	6.78	7.12	5.05	7.00	6.25	10.20	8.36
61.	3.44	6.08	9.12	2.94	4.73	4.75	7.50	4.46	7.00	7.20	10.19
62.	4.37	5.00	5.41	2.49	5.63	3.68	6.37	3.99	4.94	5.29	8.72
63.	4.26	2.58	4.10	2.94	2.67	2.40	2.57	6.14	4.17	5.30	4.43
64.	4.91	4.36	4.59	4.56	2.85	5.20	2.50	6.67	5.11	9.54	5.03
65.	1.87	5.07	6.26	4.29	4.29	4.70	4.89	3.55	5.59	5.74	7.23
66.	3.94	8.40	5.81	5.36	6.17	8.63	4.18	6.90	7.37	10.90	8.36
67.	3.08	2.49	3.33	2.30	4.17	2.38	3.45	4.16	5.56	4.77	6.08
68.	2.19	3.90	5.91	4.15	5.22	4.40	4.45	2.50	7.00	6.37	7.64
69.	2.84	3.32	5.19	5.80	5.94	5.06	4.00	4.42	6.44	7.07	6.79
70.	4.18	4.50	3.50	1.86	4.39	5.80	3.94	3.40	4.94	6.04	6.25
71.	2.00	3.12	4.39	4.25	6.21	2.90	4.76	3.30	3.61	4.76	6.73
72.	2.17	2.14	2.23	4.16	1.22	2.35	2.10	2.48	.89	4.63	2.36
73.	4.42	5.48	5.43	7.29	8.71	4.32	6.68	5.39	7.37	9.66	9.00
74.	4.98	9.54	7.16	5.31	8.50	5.60	8.00	6.78	10.80	11.20	12.08
75.	1.32	2.64	5.73	3.70	8.29	2.90	6.50	3.10	7.18	4.60	9.00
76.	4.72	4.02	3.81	5.15	7.19	6.00	5.39	5.28	6.33	7.95	7.78
77.	4.04	3.64	5.17	2.62	1.29	5.02	2.28	2.73	2.74	4.89	3.93
78.	4.89	6.18	6.35	4.13	4.00	6.17	4.10	5.21	5.05	7.65	6.07
79.	5.90	4.07	3.75	4.62	6.39	5.80	5.37	5.93	6.40	8.13	8.25
80.	4.83	4.44	7.85	2.77	6.29	5.63	6.53	4.50	7.12	6.47	9.85
81.	5.20	7.48	5.35	4.41	6.25	6.84	4.90	7.00	7.16	9.81	8.28
82.	3.39	3.33	3.25	2.20	2.41	3.41	4.00	3.36	3.74	4.72	4.39
83.	4.63	3.72	3.00	4.34	2.78	5.30	2.79	4.15	4.94	7.30	5.30
84.		4.88	5.89	4.90	8.31	4.54	6.50	6.34	8.12	8.30	10.15
85.	5.60	2.27	6.24	5.41	7.76	4.34	6.21	5.40	7.05	6.90	9.43
86.	4.58	5.70	6.77	5.09	6.47	4.89	6.38	5.60	6.83	10.73	9.22
87.		6.82	5.00	3.87	4.32	6.42	3.74	4.37	6.82	7.54	6.93
88.	3.59	2.21	4.71	2.58	4.72	2.90	4.30	3.90	5.21	5.34	7.53
89.	1.93	4.12	6.42	4.38	6.36	4.09	5.75	3.90	4.79	5.79	9.22
90.	3.58	3.11	5.20	2.51	4.20	4.14	4.79	3.38	4.95	5.71	7.78
91.		4.58	6.16	2.37	7.66	4.23	6.58	3.29	8.00	6.59	10.23
92.	3.75	3.72	4.32	6.29	5.00	4.85	4.81	3.85	5.35	6.90	6.94
93.	3.08	4.26	4.58	1.41	6.57	3.67	5.26	3.00	7.88	5.16	7.46
94.	2.03	2.64	3.36	3.60	2.42	2.63	3.05	3.23	2.89	3.22	4.98
95.	2.12	7.70	7.35	4.06	7.00	3.78	6.40	2.33	7.35	7.68	9.08
96.	6.87	7.44	8.70	6.66	11.32	5.92	10.71	5.96	10.80	11.50	14.45

Item Number	College Group 1	College Group 2	High School Group 4	Men Groups 1–2–4	Women Groups 1–2–4	All Combined Groups 1–2–4
97.	1.33	1.40	4.43	2.18	2.60	2.94
98.	2.62	2.58	1.05	2.81	2.11	3.47
99.	2.11	1.74	1.67	1.86	2.73	3.35
100.	1.20	3.22	1.56	3.12	1.40	3.15
101.	1.74	5.70	3.51	3.40	5.11	5.80
102.	2.68	.18	2.03	2.16	1.60	2.56
103.	1.57	3.00	2.78	2.21	4.05	3.90
104.	4.05	1.09	1.27	6.00	1.00	3.55
105.	6.10	1.60	3.59	4.85	3.85	6.18
106.	2.75	2.00	4.53	4.68	3.58	5.76
107.	1.36	2.80	4.42	2.68	4.12	4.64
108.	1.05	1.17	2.25	1.09	2.38	2.58

TABLE XI—Continued

Item Number	College Group 1	College Group 2	High School Group 4	Men Groups 1–2–4	Women Groups 1–2–4	All Combined Groups 1–2–4
109.	2.47	1.59	2.76	2.60	1.63	2.89
110.	4.68	5.08	—.69	3.01	2.64	4.07
111.	3.64	2.62	2.02	3.70	2.67	4.19
112.	3.73	4.58	2.35	2.93	2.40	3.87
113.	1.13	1.61	.28	1.40	1.56	1.83
114.	1.86	1.56	—.60	.96	.36	.85
115.	2.61	4.04	1.39	3.00	2.51	5.02
116.	3.31	2.28	—.28	1.60	2.32	2.75
117.	4.16	1.58	3.15	4.11	4.30	5.21
118.	.83	1.66	1.37	2.54	.25	2.27
119.	1.64	2.31	.70	.58	.53	.70
120.	2.01	1.91	.83	1.50	2.11	2.80
121.	1.76	1.07	.51	1.24	1.73	2.07
122.	1.58	1.79	2.26	2.60	2.06	3.44
123.	2.63	1.81	2.32	3.22	2.58	4.13
124.	1.38	2.23	.97	1.50	2.18	2.84
125.	5.09	.87	2.43	4.54	2.60	4.76
126.	2.00	2.57	1.75	3.00	2.54	3.82
127.	.83	3.44	1.20	2.36	2.33	3.15
128.	2.26	1.37	.94	.49	3.16	3.00
129.	1.81	.24	.33	.96	.90	1.30
130.	4.15	2.17	1.70	4.48	2.50	2.95
131.	1.91	3.10	.81	3.21	1.50	3.30
132.	2.06	2.96	3.54	5.04	1.90	4.64
133.	2.29	3.75	1.75	3.44	5.24	4.40
134.	.82	4.04	2.28	2.90	2.94	3.80
135.	3.24	2.87	3.47	2.50	3.28	3.66
136.	.88	1.50	2.45	1.73	.71	1.72
137.		1.75	.71	.33	1.11	1.14
138.	3.01	1.99	1.21	4.25	1.04	3.19
139.	4.02	3.14	1.47	4.71	3.40	4.50
140.	1.97	1.56	.27	1.17	2.85	2.10
141.	2.67	.48	1.46	1.87	1.81	2.79
142.	6.41	1.94	4.07	3.72	3.20	5.54
143.	3.71	1.92	1.97	2.50	3.57	6.20
144.	1.31	3.27	1.26	3.11	.77	2.16
145.	1.28	5.04	2.72	3.33	2.65	4.00
146.		.86	3.02	2.89	1.62	2.76
147.	—.36	1.27	1.35	1.71	.20	1.22
148.	1.87	2.64	2.91	2.15	3.16	4.50
149.	.49	2.65	.35	1.63	.52	1.40
150.	2.24	2.90	2.94	3.41	3.00	4.89
151.	—1.03	.72	—.59	—1.00	.45	—.43
152.	—.48	2.43	1.29	.29	1.32	1.73
153.	1.22	2.54	1.28	.52	4.00	2.76
154.	1.65	3.59	1.72	1.18	2.00	2.60
155.	1.33	.80	1.17	1.05	1.25	1.73
156.	3.40	3.74	.75	4.22	2.43	4.70
157.		.57	4.06	2.64	.90	2.59
158.	1.24	2.82	.63	1.36	1.46	1.82
159.	.53	.23	.50	1.27	.16	.79
160.	2.68	1.15	1.42	2.14	2.25	3.07
161.	—1.89	—1.02	—.58	—.90	—2.18	—1.46
162.	3.52	2.25	2.22	2.70	3.88	3.65
163.	2.88	2.62	1.74	2.60	3.14	4.82
164.	1.82	1.22	1.53	1.60	1.70	2.44
165.	1.78	1.90	1.85	2.00	1.24	2.02
166.	.95	2.72	3.86	1.80	3.90	3.75

TABLE XI—Continued

Item Number	College Group 1	College Group 2	High School Group 4	Men Groups 1–2–4	Women Groups 1–2–4	All Combined Groups 1–2–4
167.	4.36	3.20	1.27	3.86	2.66	4.60
168.		1.50	.89	1.11	1.09	1.57
169.	1.77	3.05	3.97	4.68	2.12	4.34
170.	4.89	2.75	2.90	4.75	3.09	5.83
171.	2.09	4.73	3.19	4.78	2.85	5.62
172.	3.26	2.27	1.76	3.15	2.38	4.12
173.		1.73	2.20	2.00	1.60	2.65
174.	3.66	1.85	2.74	2.90	3.50	4.57
175.	—.50	1.59	1.50	.69	1.25	1.33
176.	5.36	1.81	4.64	4.63	4.62	5.50
177.		1.95	.02	1.07	.94	1.38
178.	.22	1.35	1.06	2.90	1.90	1.63
179.	1.72	2.36	.18	2.81	1.91	3.22
180.	1.85	.07	.52	1.21	.82	1.33
181.	—1.53	1.22	2.32	.92	1.21	1.45
182.	.44	.50	.87	.52	.91	.80
183.	4.56	2.21	.82	2.61	3.73	4.27
184.	.43	4.26	2.41	2.53	3.37	4.23
185.	.20	1.79	—.21	1.02	.19	.81
186.	1.95	1.40	2.25	2.25	2.04	2.89
187.	1.14	2.27	4.23	1.80	3.06	3.50
188.	1.86	2.29	3.61	3.35	1.65	3.51
189.	2.68	4.18	1.46	1.73	3.48	3.38
190.	3.92	2.31	.83	2.70	2.40	4.42
191.	2.87	1.79	1.86	2.11	4.30	4.00
192.		2.50	4.23	2.90	2.87	4.00

Item Number:	College Men Group 1	College Women Group 1	Combined Group 1
193.	3.00	2.30	3.06
194.	1.80	.70	1.68
195.	.60	—.30	.64
196.	4.00	2.90	4.24
197.	3.30	2.60	2.89
198.	3.10	2.30	4.03
199.	2.10	—1.10	.41
200.	1.80	1.80	2.19
201.	—.50	.80	.34
202.	1.60	4.80	4.81
203.	.90	6.40	3.63
204.	1.40	2.10	2.59
205.	2.20	—.50	1.02
206.	2.60	2.80	3.18
207.	.00	.00	.09
208.	—.10	.70	.39
209.	1.50	1.50	1.98
210.	.30	.00	.25
211.	2.70	2.80	4.12
212.	2.50	2.00	2.31
213.	.90	1.90	2.18
214.	2.20	1.40	2.22
215.	2.60	2.50	3.01
216.	3.40	.70	2.44
217.	.50	4.00	2.46
218.	4.80	2.30	4.70

TABLE XI—Continued

Item Number:	College Men Group 1	College Women Group 1	Combined Group 1
219.	—.40	.30	.28
220.	.30	.00	.57
221.	2.80	2.30	3.87
222.	2.50	2.40	3.41
223.	4.00	3.60	6.03
224.	1.70	.00	1.19
225.	4.00	3.50	4.13
226.	—.50	.50	—.06
227.	3.40	1.40	3.25
228.	3.10	2.50	3.16
229.	.60	—1.30	—.38
230.	2.40	2.40	2.75
231.	—2.40	—.50	—1.46
232.	3.20	.90	2.43
233.	1.00	.90	1.74
234.	1.30	.50	1.39
235.	3.00	.00	2.28
236.	3.10	1.00	2.98
237.	.30	—.20	.34
238.	—.60	2.00	1.03
239.	1.30	.50	1.14
240.	3.70	.20	2.07
241.	2.60	1.20	2.46
242.	.70	—.20	.24
243.	1.90	—.20	1.01
244.	1.00	.70	.95
245.	3.90	.40	2.92
246.	—1.10	—.20	—.64
247.	1.20	—1.10	.37
248.	.80	.80	.79
249.	3.80	1.70	2.38
250.	2.70	1.10	2.14
251.	2.90	4.40	4.58
252.	2.50	.50	1.58
253.	2.70	2.00	3.08
254.	.10	—2.50	—1.38
255.	3.60	4.50	5.13
256.	1.70	1.80	1.73
257.	.80	3.20	2.68
258.	1.10	—1.40	—.41
259.	—2.90	1.60	—.22
260.	1.60	.90	1.43
261.	—.70	—.80	—1.25
262.	2.60	2.50	2.81
263.	1.50	.60	1.12
264.	1.60	1.10	1.80
265.	.70	1.10	1.29
266.	.90	—1.30	—.59

tiates men and women about equally well. The mean critical ratio for men is 4.85 and for women 5.51. The mean critical ratio for the high school students of group 5 is 5.39 and for the college men in group 3 is 4.85. The relative size of the two criterion groups might account for this difference.

When an item in the scale produced a negative differentiating

score it is preceded in the table by a minus sign. The only items among the 192 which showed any consistent tendency for a negative score were items number 151 and 161. These negative differences were not large. The distributions which make for the best items are those which are skewed in opposite directions, the more marked the positive and negative skewness for opposing criterion cases the better the item. Items which are poor items may show a number of uniform types of distributions. If the item is too easy or too difficult for all subjects it will not differentiate them. For most items, a tendency toward a high standard deviation will produce overlapping of distributions which reduces the diagnostic value of the item. Items tending toward either a normal or rectangular distribution are then usually poor items. On some items, one distribution is fairly normal, while the other is highly skewed. These items may show diagnostic value. The problem of analysis of item differences in the reaction to items will be treated further in a later division of this report.

Table XII includes the critical ratios for the criterion groups used in validating the items on the Speech Experience Inventory. The data for these groups also have been plotted separately and in combination. Items 1 to 48 were retained in the final form of the scale. The mean critical ratio values for groups 2 and 4 in combination were 6.48 and for groups 3 and 5 were 11.17. The mean difference in these critical ratios are probably largely the result of the fact that groups 3 and 5 contained more cases than groups 2 and 4. The fact that these means are higher than those for similar groups on the Speech Attitude Scale may be the result of a number of factors. Some plausible explanations are that they were based on items which were all positively worded, and that they referred to behavioral rather than attitudinal factors in personality.

The mean critical ratio value for men in groups 2 and 4 is 5.44 compared with a critical ratio value for women of 4.22. The experience inventory seems to have a somewhat better differentiating power for men than women. The mean of the critical ratios for college students in group 3 is 7.61 compared with the mean ratio for high school students in group 5 of 7.83, and shows virtually no difference. Only item number 96 showed a negative differential ratio in one group.

The critical ratios for the S. C. Scale are presented in Table XIII. The first 48 items were retained for Form B of this scale. All of these items show absolute statistical significance for the combined groups, and a high probability of significance for sub-groups. The mean critical ratio for the first 48 items in groups 3 and 5 combined

TABLE XII

SPEECH EXPERIENCE INVENTORY

CRITICAL RATIOS FOR CRITERION GROUPS

Item Number:	COLLEGE Group 2	COLLEGE Group 3	HIGH SCHOOL Group 4	HIGH SCHOOL Group 5	MEN Groups 2–4	WOMEN Groups 2–4	COMBINED Groups 2–4	COMBINED Group 3–5
1.	8.50	10.40	5.48	6.74	9.14	5.71	10.80	16.00
2.	7.88	7.34	4.22	8.93	5.35	3.06	6.60	11.58
3.	7.82	11.25	5.35	1.93	8.35	4.86	7.68	6.75
4.	7.80	12.58	5.13	4.06	5.76	5.00	6.94	13.36
5.	7.30	8.40	7.14	9.94	6.02	8.06	9.78	15.40
6.	7.05	8.22	5.53	.80	8.58	4.21	10.73	5.70
7.	6.50	7.95	6.20	11.60	7.95	4.84	5.00	14.00
8.	6.20	8.40	3.57	4.28	3.53	3.84	5.25	8.90
9.	5.70	8.12	5.80	8.47	4.72	4.93	7.06	12.00
10.	5.62	5.80	6.34	6.80	4.92	4.88	7.09	12.78
11.	5.60	8.60	7.34	9.25	8.00	3.88	6.38	12.75
12.	5.12	9.10	7.50	13.00	9.33	5.17	8.88	15.80
13.	5.04	6.52	5.17	9.94	5.82	5.71	7.83	11.90
14.	5.00	12.35	3.61	7.47	4.64	3.00	5.44	13.00
15.	4.97	8.47	5.66	10.05	6.34	2.62	6.00	11.25
16.	3.04	5.90	4.61	3.53	4.07	2.97	4.94	7.59
17.	4.46	8.38	6.34	8.62	5.29	5.28	7.85	13.90
18.	4.40	5.20	2.03	6.34	4.55	3.80	6.46	9.18
19.	4.06	10.55	4.00	9.00	7.29	5.30	6.65	13.00
20.	4.40	10.55	3.66	7.80	4.37	6.15	8.59	11.50
21.	4.20	6.90	6.85	8.56	7.25	4.52	7.30	11.12
22.	4.32	10.00	4.61	8.06	3.95	5.84	6.26	14.10
23.	4.02	5.50	4.11	9.46	4.92	4.79	6.26	8.58
24.	3.95	9.61	7.42	10.20	7.25	4.73	8.00	13.35
25.	3.42	5.32	6.25	10.10	5.31	5.28	7.15	11.65
26.	2.95	6.75	3.03	6.42	3.32	4.57	5.04	6.74
27.	3.89	6.82	3.52	8.23	5.26	4.01	6.34	11.00
28.	3.00	7.27	8.20	7.13	3.69	3.74	7.27	10.92
29.	3.83	7.42	6.43	10.00	3.58	5.75	6.93	12.10
30.	2.46	7.30	6.85	9.80	4.55	3.28	6.42	16.75
31.	3.63	10.76	5.00	7.44	5.37	3.91	6.02	14.45
32.	2.95	7.67	4.04	10.75	5.16	2.76	4.56	12.70
33.	2.81	8.25	4.72	8.06	3.80	3.33	5.52	11.48
34.	2.92	6.47	3.94	7.56	3.65	3.40	4.83	10.10
35.	2.62	3.94	5.53	6.35	4.77	2.45	6.33	7.84
36.	3.01	4.63	6.57	2.54	5.97	5.49	6.69	4.91
37.	3.40	9.67	5.51	12.45	6.28	2.63	5.34	15.30
38.	2.01	6.75	5.66	10.00	5.97	3.48	6.81	11.55
39.	3.37	8.83	2.27	6.62	4.22	3.77	5.66	11.50
40.	2.05	7.06	5.80	4.40	4.47	3.33	5.54	6.20
41.	3.29	4.30	5.16	9.29	6.37	3.85	6.37	5.17
42.	2.00	6.30	5.02	3.92	6.09	3.31	4.77	6.42
43.	2.87	5.91	5.15	4.81	4.01	3.19	4.81	10.25
44.	2.50	3.71	5.17	10.15	5.00	2.16	3.70	10.82
45.	2.50	3.69	4.83	8.58	5.28	4.05	5.63	8.90
46.	2.55	6.25	4.13	9.34	4.59	2.08	5.00	12.10
47.	3.03	6.50	3.31	8.50	2.74	6.12	5.14	10.25
48.	3.01	7.53	5.00	8.88	6.64	3.24	5.42	13.50

TABLE XII—Continued

SPEECH EXPERIENCE INVENTORY

CRITICAL RATIOS FOR CRITERION GROUPS

Item Number	COLLEGE Group 2	HIGH SCHOOL Group 4	MEN Groups 2–4	WOMEN Groups 2–4	COMBINED Groups 2–4
49.	3.05	2.42	3.95	1.47	3.38
50.	4.80	2.10	3.78	2.32	4.38
51.	2.50	1.56	1.29	1.56	2.35
52.	2.11	5.27	2.90	4.16	4.61
53.	1.29	1.66	1.86	1.83	2.57
54.	3.93	4.46	4.66	1.73	4.57
55.	3.10	1.83	2.65	1.81	3.44
56.	1.60	3.94	3.30	2.32	4.37
57.	4.60	2.72	3.64	3.77	5.16
58.	2.40	3.28	1.41	4.45	3.86
59.	1.70	2.43	3.41	1.39	2.90
60.	1.80	1.38	3.33	1.14	3.44
61.	1.77	2.97	2.79	1.22	2.96
62.	2.24	3.21	6.18	1.76	4.82
63.	3.30	2.25	2.61	2.58	3.82
64.	3.44	1.60	2.40	3.08	4.60
65.	3.52	2.64	2.76	3.43	5.04
66.	3.89	.40	3.74	2.05	3.92
67.	3.46	2.17	3.77	2.39	4.15
68.	3.54	2.18	3.82	2.68	5.02
69.	3.20	.83	1.90	.56	.18
70.	1.44	4.76	3.76	2.66	4.90
71.	2.30	.79	1.68	2.29	1.87
72.	2.80	2.20	.38	2.40	1.64
73.	3.39	3.43	1.36	2.85	6.01
74.	2.46	6.85	4.55	3.28	6.42
75.	2.40	4.25	7.61	2.06	5.59
76.	1.96	4.63	2.78	3.07	4.41
77.	1.42	3.85	3.64	1.82	3.22
78.	2.50	3.05	2.70	3.17	5.24
79.	1.21	3.47	1.38	3.24	3.95
80.	2.03	4.44	2.07	4.53	4.34
81.	1.70	2.66	2.16	2.22	3.08
82.	2.50	5.27	3.67	2.91	5.95
83.	2.62	2.50	3.42	1.98	4.00
84.	2.58	1.66	3.17	2.02	3.59
85.	.48	2.74	1.02	1.57	1.72
86.	1.83	5.43	1.75	2.82	3.62
87.	2.13	2.24	2.44	2.62	3.57
88.	1.49	5.17	2.85	3.14	4.30
89.	1.02	2.27	2.49	1.00	2.29
90.	3.23	3.26	4.78	1.85	3.69
91.	3.20	3.55	3.93	2.05	4.20
92.	3.28	2.17	3.21	1.61	3.55
93.	2.25	3.65	3.97	1.64	3.20
94.	2.40	6.87	5.31	2.81	5.04
95.	3.84	2.50	4.77	2.16	4.77
96.	0.00	1.51	1.84	−.92	.85
97.	2.68	3.57	3.25	1.86	4.17
98.	2.05	5.00	3.49	2.82	5.54
99.	2.08	2.00	2.50	1.06	3.04
100.	1.88	2.50	3.05	3.74	2.28

is 5.36. For the egocentric or odd numbered items it is 5.58 and for the sociocentric or even numbered items it is 5.13, a moderate difference in favor of the egocentric items.

The mean value of critical ratios for men on these items is 3.81 and for women it is 4.04. The college group has a mean ratio of 3.62, and the high school group a mean value of 4.54 for the final scale form items. In light of the number of cases used in these computations they do not compare unfavorably with those for the other scales. In spite of the fact that many of these critical ratios are small, only item number 51 showed a negative critical ratio for one group.

The second factor taken into consideration in reducing the number of items in revising preliminary scales was the factor of scale reliability. It is necessary to retain a sufficient number of items to produce high reliability in the scale form. Table XIV indicates the reliabilities on various forms of the Speech Attitude Scale. These reliability correlations have been computed on groups of 200 to 600 subjects and thus would show low probable errors. All figures are for raw reliability correlations except those for Form F where corrections for split half have been included. These split half correlations were derived from correlations of scores on the first 48 items in Form F against the last half. These items were put up at the time in scale forms called Form D and Form E in an attempt to develop

TABLE XIII

S. C. Scale Critical Ratios for Criterion Groups

Item Number:	College Group 3	High School Group 5	Men Groups 3–5	Women Groups 3–5	Combined Groups 3–5
1.	3.25	3.18	3.90	2.50	4.35
2.	4.20	4.52	4.09	3.50	5.05
3.	3.14	5.96	3.90	5.70	6.28
4.	3.05	4.32	2.33	4.50	5.00
5.	5.60	4.83	5.47	4.80	6.92
6.	3.67	3.27	3.00	3.60	4.70
7.	3.27	4.10	5.33	3.20	5.92
8.	2.18	3.40	3.11	1.70	3.93
9.	2.00	5.23	2.88	4.60	5.23
10.	2.14	3.71	3.45	2.60	4.00
11.	3.00	5.46	4.40	4.30	6.06
12.	4.20	5.10	5.20	5.20	6.82
13.	4.37	2.96	3.40	3.60	5.06
14.	3.16	6.20	4.90	4.50	6.93
15.	4.51	5.32	4.30	5.30	5.06
16.	2.26	3.09	2.50	4.57	4.06
17.	2.68	5.25	5.40	2.50	6.08
18.	2.58	5.10	4.30	2.40	6.64
19.	2.79	3.65	3.10	3.00	4.27
20.	2.39	3.52	2.40	4.30	4.04
21.	3.20	3.85	3.00	4.30	5.07
22.	4.92	3.82	4.20	4.10	5.73

TABLE XIII—Continued

Item Number	S. C. Scale Critical Ratios for Criterion Groups: College Group 3	High School Group 5	Men Groups 3–5	Women Groups 3–5	Combined Groups 3–5
23.	2.52	4.05	3.10	4.00	4.93
24.	3.63	2.71	2.60	3.40	4.50
25.	4.48	4.44	5.00	4.50	7.44
26.	5.00	4.28	4.90	5.00	7.12
27.	3.10	5.96	4.50	4.20	4.26
28.	1.88	4.88	2.70	2.70	4.14
29.	5.59	2.22	3.40	4.70	5.08
30.	4.87	4.47	6.20	4.30	6.27
31.	5.58	3.92	2.64	3.00	3.48
32.	5.66	3.06	3.50	3.80	5.25
33.	2.08	3.68	2.90	3.10	4.15
34.	1.95	4.10	2.20	5.20	5.16
35.	5.40	5.65	4.50	5.10	6.44
36.	2.86	4.77	2.80	6.00	5.08
37.	2.69	5.78	4.40	5.00	5.74
38.	5.23	2.61	3.60	3.60	5.12
39.	3.95	5.63	4.90	4.10	6.33
40.	2.60	5.45	3.50	4.50	6.06
41.	4.00	7.08	4.60	6.00	7.33
42.	3.22	4.07	3.50	3.20	4.75
43.	7.38	5.10	5.70	6.10	7.00
44.	3.97	3.04	3.00	3.56	4.75
45.	3.76	3.62	3.90	3.60	5.27
46.	2.12	3.53	3.20	2.30	3.59
47.	3.12	5.00	5.10	3.50	6.23
48.	1.80	3.79	1.90	4.60	4.32
49.	1.03	1.67	.80	2.10	1.90
50.	1.03	3.80	2.39	2.49	3.63
51.	1.52	3.10	—.06	3.20	3.25
52.	4.20	1.46	1.32	3.90	3.41
53.	2.10	2.88	2.37	2.80	4.17
54.	.55	2.72	2.17	1.40	2.44
55.	2.90	2.39	2.50	2.00	6.20
56.	.69	3.32	1.66	2.40	2.90
57.	1.31	3.05	3.70	.38	2.00
58.	1.91	5.97	1.20	1.30	2.80
59.	1.67	4.10	2.50	3.80	4.33
60.	1.80	.73	1.70	.27	1.87
61.	2.04	2.23	3.00	1.50	3.59
62.	3.72	1.58	3.10	1.90	3.99
63.	.29	1.58	.52	1.80	1.53
64.	1.15	1.58	.60	2.10	1.92
65.	1.02	3.50	2.40	2.00	3.40
66.	2.86	1.65	2.50	1.40	2.71
67.	2.86	2.25	2.70	2.40	3.47
68.	.65	3.00	2.30	2.00	2.93
69.	1.67	4.45	3.00	3.10	4.16
70.	1.06	.83	.71	1.00	1.23
71.	2.16	1.05	2.10	1.00	2.12
72.	2.96	2.31	2.60	2.80	3.77
73.	2.11	4.32	2.20	3.00	3.77
74.	2.07	3.29	1.30	4.80	4.24
75.	1.82	2.77	1.90	2.80	2.92
76.	1.60	3.73	3.10	1.30	2.30
77.	2.80	3.77	2.00	4.70	4.77
78.	3.54	2.64	2.30	4.00	4.40

TABLE XIV

RELIABILITY, CORRELATIONS FOR SPEECH ATTITUDE SCALE

	Form A—250 Items	
College	Odd-Even	+.93
	Test-Retest	+.90
	Positive-Negative	+.87
	Form C—192 Items	
College	Odd-Even	+.88
	Test-Retest	+.94
	Positive-Negative Items	+.73
High School	Odd-Even	+.91
	Positive-Negative Items	+.64
	Form F—96 Items	
College	Split-Half	+.80
	Corrected	+.89
	Test-Retest	+.89
High School	Split-Half	+.85
	Corrected	+.92

two comparable forms of the Speech Attitude Scale. When it was discovered that these short forms had reliabilities of only +.80 and +.85 for college and high school groups respectively it was decided to combine them in a single form. Form F reliabilities may be considered sufficiently high for purposes which such a scale ordinarily serve.

The test-retest reliabilities were taken over a period of three to four weeks time and indicate that a relatively stable factor is measured by the scale. Direct correlation of positively worded items with the negatively worded items indicates reliabilities lower than reliability computations which ignore these item types. If the two types of items are to be used in a scale these correlations indicate that they should be well jumbled and that it cannot be safely assumed that two forms based on the different types of items would give us the same differentiation as they do when used in combination.

The two factors for the satisfactory development of an attitude scale have been demonstrated. The items retained have satisfactory differentiating power for all groups. The major scales, as group measuring instruments, have satisfactory reliabilities. Some of the items eliminated have differentiating power as high as some items retained. The only factor determining choice among such items was the incidental one of the variety of activities suggested by the statements. When all other factors were constant it was deemed wise to retain in the final form of the scale items which suggested as wide a variety of speech activities as possible.

The reliabilities of the Speech Experience Inventory are indicated

in Table XV. These are raw reliability correlations based on 350 cases for the first and 500 cases for the second college group and 600 cases for the high school group. They indicate a satisfactory reliability for scales of this type.

TABLE XV

RELIABILITIES FOR SPEECH EXPERIENCE INVENTORY

	Form A—100 Items	
College	Odd-Even	+.92
	Form C—48 Items	
College	Odd-Even	+.91
High School	Odd-Even	+.91

The reliabilities for the S. C. Scale Form B for 100 cases each for the high school and college level is indicated by split-half corrected correlations of +.79 for the high school group and .73 for the college group. The corrected odd-even correlation for this group at the high school level is +.80 To make this scale very serviceable for group purposes it will be advisable to at least double its length with items of the same type which have valid differentiating power.

CHAPTER IV

FURTHER STUDIES OF VALIDITY AND ANALYSIS OF DATA

In the development of scales of these types the problem of the analysis of validity is one of the most difficult ones. We may take as a definition of validity a definition formulated by The National Association of Directors of Educational Research,[18] who state that the validity of a test is "the correspondence between the ability measured by the test and the ability otherwise objectively defined and measured."

The usual procedure involves the correlation of the test in question with another test or rating. For this method of determining validity to be useful it is necessary to have an outside criterion which also provides an accurate measure. Bingham writes,[19] "The fact that tests of vocational aptitude so frequently have low coefficients of validity is not alone due to the difficulty of devising reliable tests of the aptitudes it is desirable to measure. Adequate and reliable criteria of success against which to validate the tests are no less difficult to define and measure." What is true of vocational aptitude scales may be said of all scales of this type. There are no known personality tests

[18] Quoted from J. Long and P. Sandiford; *ibid.*, p. 1.

[19] Bingham, W. V., *ibid.*, p. 214.

in the field of speech which have a demonstrated validity as indices of personality problems of classroom speakers. Some raters agree with fair validity in rating the performance of speakers and others do not. In fact it may be suggested that to the extent that tests are valid measuring instruments, they would be more useful to the teacher whose judgments correlate poorly with test scores, than to the teacher whose judgments of the traits in question correlate well with them. Another method of determining test validity is by computing critical ratios for differences of test scores from groups of subjects who may be selected by some less rigidly defined basis of classification than a test or rating scale value. Validity is also reflected in the extent to which a test reflects changing conditions in subjects taking the test.

In analyzing the test validity of personality and attitude tests, two general factors of validity of test scores may be pointed out. First as Sorenson [20] indicates "When correlations higher than the usual correlations are obtained, they may be interpreted as high correlations, but if they are smaller than the typical correlations of the given variables, then the correlations may be thought of as being small. According to this point of view, correlations are large or small as measured by a generally accepted standard." In other words the value of correlational indices may be interpreted on a relative as well as an absolute basis. The second factor to be noted is that validity correlations for personality scales are seldom as high as for intelligence or achievement tests. Guilford [21] discusses a number of the reasons why this condition prevails. Bingham [22] says "When predicting college grades from scores on a scholastic aptitude test, the coefficient of validity may in rare instances be as high as .80, but is oftener not much above .50. Most vocational aptitude tests have lower validities. This is to be expected." St. John [23] reported in his survey of 39 studies dealing with the correlation between tests of intelligence and grades that for college students the mean correlation was +.40 and for high school students +.36. If validity correlations derived for the speech personality scales under investigation do not compare

[20] Sorenson, H., *Statistics for Students of Psychology and Education*, McGraw-Hill, 1936, p. 278.

[21] Guilford, *ibid.*, p. 449.

[22] Bingham, *ibid.*, p. 218.

[23] St. John, C. W., *Educational Achievement in Relation to Intelligence*, Harvard University Press, 1930, p. 40ff.

unfavorably with the trend in validity correlations of this type the tests may be said to be relatively valid measuring instruments.

In the determination of validity correlations for these scales an attempt was made to use as many means of determination of validity as were reasonably possible under the circumstances. The first of these attempts to be reported are found in Table XV. Validity correlations of ratings on all forms of the speech attitude scale are listed, and for men and women separately on Form F. Critical ratios for scale differences from the extreme quartiles of ratings are also reported for some of the groups. Ratings have been computed between test scores and teachers' ratings on speech attitudes and general effectiveness in speaking judged over a considerable period of time, term grades, teacher committee ratings on speech attitudes and general effectiveness in single projects, average of at least 20 classmates' ratings on speech attitudes and self-ratings on speech attitudes and general effectiveness. Of these ratings the ones which might be expected to provide the best index of the criteria are students' self-ratings on speech attitudes and general effectiveness. However, since these correlations are based on only a three step scale they can be interpreted only as suggestive. The student self-rating on speech attitudes was done on the following scale which is part of an item in the objective case history form.

"Rate yourself on each of the following elements of speech by underlining the phrase which best describes your speaking activities: Nervousness: a. Marked Nervousness and Discomfort, b. Neither Worried nor Enthusiastic, c. Confident and Enthusiastic."

The self-rating scale for general effectiveness taken from the case history form has already been described. The student ought to know himself as no one else could in that he alone has experienced his feelings and attitudes and has a long time basis for formulating judgment. On the other hand, single self-rating on a one item scale may not correlate highly with the results of a number of judgments.

The various teachers' ratings were employed to provide various and average indices of achievement. In rating human traits or skills such as speech attitudes or general effectiveness in speech traits, it must be recognized that teachers vary not only in their ability to judge performance but also in their concepts as to what constitutes desirable qualities of performance. It is conceivable that teachers interested largely in some specialized aspects of speech might show little skill in judging the factor of "the person" in speaking. To the

TABLE XVI

VALIDITY CORRELATIONS AND CRITICAL RATIOS

SUBJECT GROUPS	TEST FORM	SCHOOL OF RATERS SUBJECTS	CRITERION RATED	PEARSONIAN CORRELATIONS MEN	WOMEN	COMBINED	CRITICAL QUARTILE RATIOS FOR DIFFERENCES
1	A	College	1 Teacher	Speech Attitudes			+.54	
2	C	College	6 Teachers	Speech Attitudes			+.28	3.50
			6 Teachers	Term Grades			+.30	4.06
			20 Classmates	Speech Attitudes			+.30	3.88
			Ave. of 3 Teachers	General Effectiveness			+.51	4.51
4	C	High Sch.	5 Teachers	Speech Attitudes			+.28	4.80
				(Range of correlations			+.16 to +.33)	
3	F	College	6 Teachers	Speech Attitudes	+.53	+.27	+.34	6.78
				(Range of correlations			+.06 to +.47)	
			6 Teachers	General Effectiveness	+.54	+.19	+.33	6.05
			Ave. of 3 Teachers	General Effectiveness			+.34	6.37
			Self-rating	Speech Attitudes	+.41	+.54	+.46	10.20
			Self-rating	General Effectiveness	+.49	+.27	+.42	6.45
7	F	College	Ave. of 2 Teachers	General Effectiveness	+.34	+.27	+.30	5.84
			Self-rating	Speech Attitudes	+.32	+.23	+.28	4.52
			Self-rating	General Effectiveness	+.34	+.36	+.35	6.09
5	F	High. Sch.	8 Teachers	Speech Attitudes	+.28	+.22	+.27	5.28
				(Range of correlations			−.02 to +.48)	
			8 Teachers	General Effectiveness	+.34	+.26	+.30	6.15
				(Range of correlations			+.03 to +.53)	
			Self-rating	Speech Attitudes	+.47	+.39	+.41	
			Self-rating	General Effectiveness	+.32	+.38	+.35	6.13
8	F	High Sch.	13 Teachers	Speech Attitudes	+.39	+.23	+.32	
			13 Teachers	General Effectiveness	+.35	+.29	+.30	
			Self-rating	Speech Attitudes	+.42	+.40	+.40	
			Self-rating	General Effectiveness	+.40	+.47	+.43	

extent that "Speech Attitudes" represent a specialized factor in speaking, special training may be required for their evaluation. Moreover, the scale items refer to speech attitudes and experiences over a wide range of situations. The teacher in most cases knows the student only in classroom speaking and perhaps largely through some specialized form of speech such as public speaking. Although this situation provides a typical setting for the use of such scales, validity indices may nevertheless be adversely affected by it. For these reasons correlations have been plotted separately for teachers as well as for all teachers together in analyzing the later forms of the scale.

Probable errors are not listed in the Table although they may be computed from the data on size of groups listed in Table I. They run from +.02 to +.04. The mean size of correlations for the combined sex groups is +.36. The correlation of teacher ratings for men is consistently somewhat higher and in some cases much higher than for women. The average ratings of 2 or more teachers' correlates somewhat better with test scores than do the average single teacher ratings. Self-ratings are higher than teacher ratings in most cases, although not as high as might be expected. On the basis of hypotheses upon which scales of this type are constructed there is reason to assume that the scale score provides a better index of the quality in question than does the self-rating formed in a single judgment. Ratings on general effectiveness seem to provide as good an index of speech attitudes as does a specific rating on the speech attitudes. The similarity of these ratings might be the result of a high positive correlation between these qualities, the "halo" effect in rating them, general inability to recognize the specific diagnostic characteristics of speech attitudes, or a high weighting of the personal quality we call speech attitudes in rating general effectiveness. The data do not provide a cue as to which of these, or other factors are operating.

An interesting question about the implications of these validity correlations may be raised at this point. If the Speech Attitude Scale provided a perfect measure of what it is supposed to measure, how high might we expect its validity correlations with teacher's ratings to be? There are several reasons for inferring that such indices of validity still might not be high. The fact that teacher's ratings on speech attitudes are formulated largely on the same basis as judgments of general effectiveness, suggests that they do not diagnose the factor of speech attitudes with high specificity. It is also plausible to assume that a number of other factors may enter into the formula-

tion of judgments on general effectiveness in speaking. If such is the case, then we would expect only a limited correlation between a valid measure of any one of these factors and the teacher's generalized judgment. The best way to determine what these factors are would be to obtain reasonable valid measures of many of them and then do a factor analysis of the teacher's judgment. Even then, these factors would vary with the reliability of judgments and variation of standards among teachers. The fact that validity correlations of teachers' judgments on general effectiveness and tests of single factors in speaking are not high on the basis of an absolute standard would not seem to indicate that the tests are not valid measures of what they are supposed to measure. If the correlations were high it would mean that judgments were not only accurate, but also that the trait in question was the primary factor upon which judgments of general effectiveness were formulated.

The critical ratios for scale scores from extreme quartile ratings indicate that the scale provides a valid differentiating mean score for these extreme cases. These differences were based on scores plotted for the upper and lower quartiles for all ratings except the self-rating on Speech Attitudes. Here the difference is between the means for the two groups which checked the two extreme statements. Since we are often interested primarily in the identification of extreme cases these indices may be considered as significant as correlations.

Table XVII indicates the interscale and intelligence test correlations with the Speech Attitude Scale. The Speech Experience Inventory shows a marked relationship with the Speech Attitude Scale. The Speech Experience Inventory scores for extreme quartiles of the Speech Attitude Scale produce score differences in groups 3 and 5 with critical ratios of 11.60 and 11.78 respectively. These scale scores

TABLE XVII

CORRELATIONS OF SPEECH ATTITUDE SCALE SCORES WITH OTHER TEST SCORES

SUBJECT GROUPS	TEST SCORES CORRELATED	CORRELATION		
		MEN	WOMEN	COMBINED
3 College	Speech Experience Inventory			+.50
7	Speech Experience Inventory	+.64	+.62	+.62
5 High S.	Speech Experience Inventory			+.52
8	Speech Experience Inventory	+.54	+.60	+.58
3 College	S.C. Scale			—.22
7	S.C. Scale	—.26	—.31	—.27
5 High S.	S.C. Scale			—.25
8	S.C. Scale	—.23	—.27	—.26
3 College	Intelligence Test Score			+.02
5 High S.	Intelligence Test Score			+.16

indicate that there is a distinct relationship between the way a person feels about speaking and the amount of speaking he does.

The S. C. Scale correlations in support of the hypothesis upon which they were constructed are all negative, although not highly so. The correlations for group 7 and 8 were based on Form B, or the 48 items form of the S. C. Scale. The short form of this test has not reduced the correlations in spite of the fact it has been shown not to be highly reliable. The intelligence test correlations included indicate that there is no relationship between intelligence test scores and speech attitudes at the college level and only a slight one, if any, at

TABLE XVIII

CRITICAL RATIOS FOR DIFFERENTIAL SPEECH ATTITUDE SCALE SCORES CHECKED FOR PROBLEMS ON A SPEECH PROBLEM CHECK LIST

PROBLEMS CHECKED	CRITICAL RATIOS
Subjects checked as showing three or more symptoms of nervousness showed difference below subjects checked as showing one symptom	1.09
Subjects checked as showing one or two symptoms of nervousness showed difference below subjects as showing no symptoms	2.61
Subjects checked as showing three or more symptoms of nervousness showed difference below subjects checked as showing no symptoms	3.23
Subjects checked as showing "Poor Eye Contact" showed difference below mean score for entire group	9.50
Subjects checked as showing "Withdrawing" tendency in personality showed difference below mean score for entire group	6.03
Subjects checked as showing "Vocal Monotony" showed difference below mean score for entire group	4.92
Subjects checked as showing "Inanimate" appearance in physical activity showed difference below mean for entire group	6.28
Subjects checked on eight or more items on entire check list showed difference below subjects checked for three or fewer problems....	3.41

the high school level. The intelligence test scores used for the college group were from the Minnesota College Aptitude Test, and for the high school group were I. Q. indices.

Table XVIII contains data provided by the teachers in the process of student rating already discussed. The check list contained a large number of items such as those referred to in the table. These items were selected for analysis on the basis of high frequency checking and the assumption that they might show relationship to speech attitudes.

The items in Table XIX were provided by the students who filled out a case history survey blank at the time they took the Attitude Scale. These items represent only a sample of the case history items but most of them show significant relationships to the factor measured by the Speech Attitude Scale. Such group differences tend not only to substantiate the validity of the scale, but also suggest the pos-

TABLE XIX

CRITICAL RATIOS FOR DIFFERENTIAL SPEECH ATTITUDE SCALE SCORES OF SUBJECTS CLASSIFIED BY VARIOUS CASE HISTORY ITEMS

ITEM CLASSIFICATION	CRITICAL RATIOS
Children in families with one or more older siblings showed scores under those for only or oldest child in the family	1.45
Children in families with two or more older siblings showed scores under those for only or eldest child in the family	2.80
Children in families where the father does no public speaking showed scores under children in families where father does at least some public speaking	5.88
Children in families where the mother does no public speaking showed scores under children in families where mother does at least some public speaking	3.88
Subjects who had acted in two or fewer plays showed scores under subjects who had acted in five or more plays	1.37
Subjects who had never participated in a debate showed scores under subjects who had participated in two or more major debates	4.61
Subjects who reported 100 or fewer hours of speech training showed scores under subjects who reported 200 or more hours of formal speech training	5.92
Subjects who rated themselves as poorly informed on contemporary affairs showed scores under subjects who rated themselves as well informed	4.98
Subjects who rated themselves occasionally or seldom a leader among associates showed scores under subjects who rated themselves usually a leader	4.70
Subjects who reported 50 or fewer recently formed acquaintances showed scores under subjects who reported 90 or more recently formed acquaintances	4.33
Subjects who reported themselves as uncertain or discouraged and worried about their future showed scores under subjects who reported themselves as happy and confident about the future	4.60
Subjects who reported three or more subjects about which they were sensitive showed scores under those who reported only one or two sensitivities	3.08
Subjects who reported spending little time on physical activities showed scores under those who reported spending much time on physical activities	2.77
Subjects who rated their health as fair or poor showed scores under subjects who rated their health as excellent	1.78
Subjects who rated themselves as having moderate or little pep showed scores under subjects who rated themselves as having marked pep	4.36
High School subjects whose father's vocational classification on a scale for abstract intelligence places them in classes 4, 5 and 6 showed scores under subjects whose father's vocational classification was 1, 2 and 3	4.78
High School subjects whose father's vocational classification on a scale for social intelligence places them in classes 4, 5 and 6 showed scores under subjects whose father's vocational classification was 1, 2 and 3	4.36
College subjects whose father's vocational classification on a scale for abstract intelligence places them in classes 4, 5 or 6 showed scores under subjects whose father's vocational classification was 1, 2 or 3	.97
College subjects whose father's vocational classification on a scale for social intelligence places them in classes 4, 5 or 6 showed scores under subjects whose father's vocational classification was 1, 2 or 3	1.69
Subjects 13 to 16 years of age showed scores under subjects 17 to 19 years of age	2.23
Subjects 13 to 16 years of age showed scores under subjects 20 years or over	5.46

sibility of the use of the scale in the study of many similar problems. The vocational classifications were made by the writer with the use of the Patterson, Schneidler and Carlson [24] tables for occupational rating. Data for this table were taken from groups number 3 and 5.

The items of Table XX comprise a miscellaneous group of factors which may throw some light on the validity of these scales. The quality measured by the scale is higher in groups of advanced school status than in secondary school status. College men receive much higher scores than college women, although high school men received

TABLE XX

CRITICAL RATIOS FOR DIFFERENTIAL SPEECH ATTITUDE SCALE SCORES OF SUBJECTS IN CERTAIN GROUP CLASSIFICATIONS

GROUP CLASSIFICATION	CRITICAL RATIOS
High school received scores under college students	8.68
High school women received scores under college women	3.61
High school men received scores under college men	8.12
College women received scores under college men	4.45
High school women received scores under high school men	.42
All women received scores under all men	4.47
Stutterers (39) in University Clinic received scores under mean for college students	4.12
Mean score for the entire college group was lower than mean score for forty-one intercollegiate debaters	7.26
Stutterers (39) in University Clinic received scores under mean score for University Intercollegiate debaters	9.60
University Extension School (Night school for adults) students (87) received scores under mean for college group	7.91
Full time Speech Clinic students received score at time of entering clinic under score received at end of eight weeks training period	3.65
One group of University students (40) in beginning speech class meeting three times a week received score at outset under score received at end of 5 months	2.07
Second group of University students (76) registered in beginning speech course received score at outset under score received at end of 5 months	4.10

scores only slightly higher than high school women. These differences may be the result of differences in the selective factor of the two populations, or the result of the fact that high school women are physically and perhaps socially more mature for their chronological age than high school men. By the time men reach college age they may have caught up with women in the matter of social maturity. When the whole population studied is considered, the men have more positive speech attitudes as measured by the scale than women. These differences were computed from data on the norms for the scale.[25]

[24] See Bingham, *ibid.*, 365ff.

[25] The Speech Attitude Scale and Speech Experience Inventory with Norms are published by C. H. Stoelting, Chicago, Illinois.

Stutterers receive scores much lower than the mean for the college group; and intercollegiate debaters receive scores much higher than the mean for their colleagues. Extension students, largely business and professional men and women who have registered for speech training because they have rcognized some deficiency in speaking in their work comprise a special class who might be expected to produce comparative low Speech Attitude test scores. The data on improvement of test scores for the group listed suggest that the quality measured by the scale is subject to modification. These data would be more conclusive if control group scores were available for comparison.

In the first course student groups no special attempt was made to work on the problem of speech attitudes, although some work is usually done with this problem. In the clinic group it constituted an important part of the work, although these subjects demonstrated initial scores which were lower, and it may be assumed that they had more difficult corrective problems to work upon than typical University students.

Table XXI contains data on validity correlations for the Speech Experience Inventory. The validity correlations of this scale are al-

TABLE XXI

VALIDITY INDICES FOR SPEECH EXPERIENCE INVENTORY FORM B

SUBJECT GROUP	SCHOOL STATUS	RATERS	CRITERION RATED	CORRELATIONS MEN	WOMEN	COMBINED
3	College	6 Teachers	General Effectiveness			+.29
			(Range of correlations			+.16 to +.53)
		Ave. 3 Teachers	Speech Attitudes			+.30
		Self-rating	General Effectiveness			+.47
		Self-rating	Speech Attitudes	+.35	+.31	+.32
7		6 Teachers	General Effectiveness	+.28	+.38	+.35
5	High S.	8 Teachers	General Effectiveness	+.38	+.31	+.35
			(Range of correlations			+.05 to +.53)
		Self-rating	General Effectiveness			+.31
8		13 Teachers	General Effectiveness	+.49	+.30	+.33
			Speech Attitudes	+.32	+.28	+.31
		Self-rating	General Effectiveness			+.38

most identical with those for the Speech Attitude Scale. The fact that the two scales have an intercorrelation of only .50 to .60 suggests that the strength of their respective validity correlations may be drawn from the diagnosis of different cases within the experimental groups. Self-ratings correlate somewhat higher with the Speech Attitude Scale than with this scale.

Table XXII indicates the inter-test correlations with the S. C. Scale and intelligence test scores for a college group. The S. C. Scale has somewhat lower negative correlations with the Experience Inventory than the Speech Attitude Scale. Since the S. C. Scale is also

in effect an attitude scale this might be expected. In making comparisons it may be noted that the S. C. Scale scores show less relationship to the Speech Experience Inventory and Speech Attitude Scale than do the ratings on test performance. The Speech Experience Inventory provides no indication of the intelligence of the subjects.

TABLE XXII

INTER-TEST SCORE CORRELATIONS FOR SPEECH EXPERIENCE INVENTORY

SUBJECT GROUP	TEST CORRELATED	CORRELATIONS MEN	WOMEN	COMBINED
5	S.C. Scale			—.07
8	S.C. Scale	—.25	—.17	—.23
7	S.C. Scale	—.18	—.19	—.20
3	Intelligence test			+.04

In Table XXIII the significance of some group differences on the Speech Experience Inventory are indicated. These differences are not as large as similar differences reported on the Speech Attitude Scale. The variation may be accounted for on the basis of absolute differences between experiences and attitudes, or they may be the result of the differences in scaling methods employed in the two scales. It may be noted again that the scaling methods on the attitude scale call for absolute judgments, whereas, on the experience scale the judgments are comparative within the sex and age groups of the subjects. In spite of this difference we find that college students report much more speech experience than high school students. This is especially true of the men, and might be expected as a result of

TABLE XXIII

CRITICAL RATIOS FOR DIFFERENTIAL SCORES ON SPEECH EXPERIENCE INVENTORY FOR VARIOUS GROUPS OF SUBJECTS

SUBJECT CLASSIFICATION	CRITICAL RATIOS
High school student mean score under college students	6.34
High school men received scores under college men	5.63
High school women received scores under college women	2.80
College women received scores under college men	2.20
High school men received scores under high school women	.94
All women received scores under all men	1.16
Students with parents in vocations classified on occupational rating scale for abstract intelligence ratings 4, 5 and 6 under received scores under students with parents whose ratings were 1, 2 and 3	2.98
College students with parents in vocations classified on occupational rating scale for abstract intelligence ratings 4, 5 or 6 received scores under students with parents whose ratings were 1, 2 or 3	1.37
High school students with parents in vocations classified on occupational rating scale for social intelligence ratings 4, 5 or 6 received scores under students with parents whose ratings were 1, 2 or 3	2.96
College students with parents in vocations classified on occupational rating scale for social intelligence ratings 4, 5 or 6 received scores under students with parents whose ratings were 1, 2 or 3	1.80

the selective factors involved in college entrance. The speech experience of college students is probably more closely related to socio-economic status than is their speech attitude, although differences here are not significant beyond a doubt. The significance of socio-economic status of high school students upon their speech experience appears to be less marked than upon their speech attitudes.

Table XXIV contains validity correlations of test scores on various outside criteria. These correlations are much lower than were comparable indices for the two major scales, but are consistently negative. They are somewhat lower for high school than for college students and for egocentric than for sociocentric items. The low self-ratings may indicate that students are less inclined to associate this tendency with the effectiveness of their speech than is true for the other scales. In spite of the fact that the scale showed lower reliability than the other scales, and that its validity correlations are much lower, the consistency of the validity correlations suggests that it is measuring something which is related, at least slightly, to speech skill. It is within the sphere of the hypothesis upon which the scale was constructed to suggest that this may be the inhibiting effect of negative speech conventions upon speech performance.

Table XXV was prepared to enable a comparison of the mean scores on the two forms of the scale for various groups. The selected inferior and superior speakers referred to as parts of groups 5 and 7 were cases selected upon a basis similar to that used in selecting criterion cases for the item validation of these scales, except that in these cases no single criterion was given preference in the selection. They were specifically the cases used in the validation of the case history form referred to earlier but to be reported in detail later. The theoretical mean for all items on Form A would be at 156.00 and for the two types of items separately at 78.00. For Form B the theoretical mean is 96.00 and for the two types of items separately at 48.00. There is a tendency in all groups to reach and in some to much exceed this theoretical mean in the acceptance of speech conventions. This is especially true of the high school students in comparison with college students and for the selected inferior speakers as compared with selected superior speakers. Table XXVI based on the data of Table XXV has been prepared to indicate the significance of these differences. It may be noted in passing that a horizontal line comparison of men and women shows little difference in scores for the two sexes except in the cases of some groups which suggest that selected

TABLE XXIV
VALIDITY INDICES FOR S.C. SCALE

SUBJECT GROUP	SCHOOL STATUS	SCALE FORM	ITEM TYPE	RATERS	CRITERION	CORRELATIONS MEN	CORRELATIONS WOMEN	CORRELATIONS COMB.
3	College	A	All	6 Teachers	General Effectiveness	—.15	—.03	—.10
			Ego-C	6 Teachers	General Effectiveness	—.30	—.01	—.13
			Socio-C	6 Teachers	General Effectiveness	—.01	—.05	—.04
			All	Ave. 3 Raters	General Effectiveness			—.03
			Ego-C	Ave. 3 Raters	General Effectiveness			—.15
			All	6 Teachers	Speech Attitudes			—.11
			Ego-C	6 Teachers	Speech Attitudes			—.09
5	High S.	A	All	8 Teachers	General Effectiveness			—.16
			Ego-C	8 Teachers	General Effectiveness	—.22	—.17	—.18
			Socio-C	8 Teachers	General Effectiveness	—.11	—.11	—.11
			All	8 Teachers	Speech Attitudes			—.14
7	College	B	All	6 Teachers	General Effectiveness	—.11	—.13	—.15
8	High S.	B	All	13 Teachers	General Effectiveness	—.14	—.11	—.20
			Ego-C	13 Teachers	General Effectiveness	—.13	—.17	—.12
			Socio-C	13 Teachers	General Effectiveness	—.09	—.06	—.06
			All	Self-rating	General Effectiveness			—.20

inferior men speakers may be more egocentric than selected inferior women speakers. The data of Table XXVI indicate definitely that

TABLE XXV

MEANS AND STANDARD DEVIATIONS FOR VARIOUS GROUPS ON S.C. SCALE

SUBJECT GROUP	SCHOOL STATUS	SCALE FORM	ITEM TYPE	MEN MEAN	MEN S. D.	WOMEN MEAN	WOMEN S. D.	COMBINED MEAN	COMBINED S. D.
2-All	College	A	All	162.20	27.35	164.30	23.20	162.00	25.60
			Ego-C	74.70	15.40	73.10	12.80	73.40	12.80
			Socio-C	87.50	16.40	91.10	21.40	89.98	17.80
7-All		B	All	100.75	15.10	101.00	14.50	100.95	16.60
5-All	High S.	A	All	184.60	24.50	186.40	27.30	185.75	27.90
			Ego-C	85.50	19.20	84.80	15.30	85.10	16.20
			Socio-C	99.10	15.30	101.60	16.10	100.65	16.10
Selected			All	197.80	28.50	189.25	25.30	193.50	26.40
Inferior			Ego-C	94.50	17.40	87.20	14.20	90.85	15.15
Speakers			Socio-C	103.30	16.30	102.00	16.50	102.65	17.75
Selected			All	164.70	23.55	172.80	27.15	168.75	24.95
Superior			Ego-C	73.20	15.60	77.60	13.00	75.40	14.80
Speakers			Socio-C	91.50	15.00	95.20	15.45	93.35	14.75
8-All		B	All	117.50	18.15	112.40	17.25	114.30	19.30
			Ego-C	55.20	10.50	54.10	11.45	53.85	11.60
			Socio-C	62.30	10.70	58.30	11.75	60.45	11.95
Selected			All	120.80	16.80	118.20	17.75	119.50	17.45
Inferior			Ego-C	58.60	8.85	54.90	11.10	56.75	11.30
Speakers			Socio-C	62.20	10.80	63.30	10.45	62.75	11.20
Selected			All	104.60	17.55	110.20	14.30	107.40	18.90
Superior			Ego-C	48.20	9.50	49.20	9.60	48.70	9.85
Speakers			Socio-C	56.40	10.45	61.00	10.75	58.70	10.30

TABLE XXVI

CRITICAL RATIOS FOR DIFFERENTIAL S.C. SCALE SCORES FOR SUBJECTS CLASSIFIED IN TABLE XXV

GROUPS DIFFERENTIATED	CRITICAL RATIOS MEN	CRITICAL RATIOS WOMEN
High School students received scores on the entire scale above college students (Groups 5 and 3)	10.05	9.68
High school students received scores on the egocentric items on the scale above college students (Groups 5 and 3)	7.20	9.50
High school students received scores on the sociocentric items on the scale above college students. (Groups 5 and 3)	8.53	5.70
Selected inferior speakers in Group 5 received scores on the entire scale above selected superior speakers	6.25	3.13
Selected inferior speakers in Group 5 received scores on the egocentric items on the scale above selected superior speakers	6.45	3.53
Selected inferior speakers in Group 5 received scores on the sociocentric items of the scale above selected superior speakers	3.77	2.04
Selected inferior speakers in Group 8 received scores on the entire scale above selected superior speakers	4.73	2.44
Selected inferior speakers in Group 8 received scores on the egocentric items of the scale above selected superior speakers	5.68	2.77
Selected inferior speakers in Group 8 received scores on the sociocentric items of the scale above selected superior speakers	2.87	1.09
Subjects of Group 3 received higher scores on the sociocentric items of the scale than on the egocentric items	10.15	12.75
Subjects of Group 5 received higher scores on the sociocentric items of the scale than on the egocentric items	8.70	14.00
Subjects of Group 8 received higher scores on the sociocentric items of the scale than on the egocentric items	5.50	9.35

there is a difference in the personal quality measured by the scale between high school and college students. There is a greater difference on egocentric items for the women and sociocentric items for the men. High school students appear less able to forget what others are thinking about them than are college students, and indicate at least a definite tendency to rationalize their difference in terms of egocentric or sociocentric conventions. Selected inferior speakers show a much greater tendency to such rationalization than do selected superior speakers. This is especially true among the men of these groups on egocentric items. The fact that the scores are higher on the sociocentric items than on the egocentric items provides some support for the rationalization hypothesis for the scale. We might expect inferior students to rationalize more in terms of the effect of their speech on others than on themselves. Whether the explanation be that the attitude causes the conventional rationalization or the convention influencing the attitude the problem is one for the development of insight and attitude change.

Chapter V

A Consideration of Item Differences

The main objective of this study has been the construction and evaluation of speech reaction scales. A part of the study has involved the analysis of the contribution of items to whole scale scores. These items may be analyzed in another way which may throw some light on the nature of speech attitudes and experiences. In this chapter the felt difficulties and frequencies of various types of speech activities and processes referred to in the scale items are analyzed. Here our main concern is not the construction of scales but an analysis of speech attitudes and experiences in specific situations. These particular data are offered only as a suggestion of real differences which appear to exist and to indicate a method which may be used in collecting such data.

If the curriculum in Speech Education is to be made most practical, a knowledge of the uses to which speech is put by the average person, as well as by specialized groups of people, should be available for the curriculum makers. If we find great differences in the frequency with which various forms of speech are used, and that special skills are necessary for proficiency in these forms of speech, we ought to know what kinds of speech are used most in order that this factor may be appropriately weighted in the curriculum. Another

factor to be considered is the differences in the difficulties which appear from the subject's point of view to characterize various speech activities and the use of various speech processes. If the use of speech is influenced by attitude it may well be that there are actual differences in proficiency of speech in various situations which are reflected by attitude. Whether or not this is true, differences in the felt difficulty of various speech functions becomes also a point for consideration of curriculum makers. It may be necessary to provide training to develop attitudes in some situations and not in others. Of course, the curriculum makers should know more about speech activities than the information which is provided by a knowledge of their frequencies, and felt difficulties, but these additional factors are not our concern at this time.

The first problem attacked in this analysis involves the study of the relative felt difficulties of various speech activities by subject groups of different types. To make this analysis, the cases of group 6 were selected from groups 2 and 4. These groups were used because all subjects in these groups took the 192 item form of the Speech Attitude Scale. One hundred cases each were taken from the median quartiles for high school men, high school women, college women and college men. Thus 400 cases in all were available for the comparisons. The median quartile cases were originally selected for this analysis because it was felt that these cases might more nearly approximate the feelings of the average speaker. Table XXVII shows

TABLE XXVII

COMPARATIVE SCORES ON SPEECH ATTITUDE SCALE OF SUBJECTS USED IN ANALYSIS OF ITEM DIFFICULTY

SUBJECT TYPE	INDICES FOR ENTIRE GROUP		INDICES OF MEDIAN QUARTILES	
	MEAN	S. D.	MEAN	S. D.
College Men Scale Scores	597.10	69.00	599.30	24.20
College Women Scale Scores	581.90	67.80	584.65	27.00
High School Men Scale Scores	554.55	66.40	552.00	22.00
High School Women Scale Scores	535.40	59.20	540.95	20.90

the means for these cases as compared with the means for the entire scale on these items. The means of these four quartile groups approximated those for the four major groups from which they were selected. Table XXVIII shows these and other scale differences when interpreted in terms of the mean score values for various items. In the last column, the mean score values for all Form C items indicates that the average item reaction approximated the exact theoretical mean of 3.00. Especially is this true for all groups when combined.

Individual groups vary as these groups vary on the entire scale. Mean differences for the various quartile groups vary widely from the means in their respective directions. The standard deviations are for the distribution of the mean scores in the respective groups, not the standard deviations of individual scores on items for these groups.

TABLE XXVIII

COMPARATIVE MEAN VALUES FOR THE ITEMS IN THE SPEECH ATTITUDE SCALE FOR VARIOUS GROUPS

SUBJECT GROUPS		FORM F ITEMS MEAN	S. D.	FORM C ITEMS ELIMINATED MEAN	S. D.	ALL FORM C ITEMS MEAN	S. D.
Median Quartiles	College	3.23	.42	2.97	.50	3.10	.46
	High S.	2.83	.39	2.91	.43	2.86	.40
	Men	3.01	.31	2.97	.40	2.99	.36
	Women	2.90	.54	2.98	.50	2.94	.50
	Combines	3.03	.38	2.94	.48	2.98	.43
Fourth Quartile Groups 1, 2 & 4		3.70	.39			3.47	.39
Fourth Quartile Groups 3 and 5		3.53	.38				
First Quartile Groups 1, 2 & 4		2.56	.42			2.62	.20
First Quartile Groups 3 and 5		2.57	.38				

Table XXIX provides some indication of the way scores on individual items vary consistently from group to group. These correlations indicate that there is a high degree of uniformity in the way various groups of subjects react to the felt difficulty of various speech activities. The activities which are relatively difficult for poor speakers are also relatively difficult for good speakers. The last correlation in the table is based on mean scores of 110 cases in each criterion group quartile or 220 cases in all for groups 1, 2 and 4, with the 400 cases for group 6. This correlation indicates that the mean score of the two quartile groups gives as approximately accurate a measure of central tendency as the score on median quartiles. That is, the items were few in which the differences of quartiles did not spread equally in either direction from the mean, rather than present a distribution

TABLE XXIX

CORRELATIONS OF MEANS FOR VARIOUS GROUPS

SUBJECT GROUPS	CORRELATIONS
First quartile means for Groups 1, 2 and 4 with means of median quartile for Group 6, all subjects and all Form C items	+.82
Fourth quartile means for Groups 1, 2 and 4 with means of median quartiles for Group 6, all subjects and all Form C items	+.78
First quartile means for Groups 1, 2 and 4 with means of first quartile for groups 3 and 5 on Form F items only	+.80
Fourth quartile means for Groups 1, 2 and 4 with means of fourth quartile for Groups 3 and 5 on Form F items only	+.75
Average of First and Fourth quartile means for Groups 1, 2 and 4 with means of median quartiles for Group 6, all subjects but on 96 items eliminated from Form C only	+.95

in which only one quartile varied significantly from the mean and the other quartile.

Table XXX was prepared to show directly the way in which speech attitudes vary for different functional speech activities. One hundred forty-five of the attitude statements which referred to different uses of speech were selected for this table. To determine the significance of mean difficulties for various items by the standard method, it would be necessary to compute critical ratios for the difference of the mean on each activity from every other mean. This would have required the computation of over 10,000 critical ratios. A shorter method of determining the comparative significance of means was sought.

The formulae for the standard deviation of the difference upon which critical ratios are based is $\sqrt{\text{S.D. ave. } 1^2+\text{S.D. ave. } 2^2}$.[26] The standard deviations of the first 25 means for the combined median quartile cases was computed and found to average .062. On some

TABLE XXX

AN ANALYSIS OF DEGREES OF EXPERIENCED EASE AND DIFFERENCES IN ATTITUDES OF SELECTED INFERIOR AND SUPERIOR SPEAKERS FOR REPRESENTATIVE FUNCTIONAL SPEECH ACTIVITIES CLASSIFIED BY SCHOOL STATUS, SEX, AND OTHER FACTORS CONDITIONING ATTITUDES

	College		High School		Men		Women		Combined	
	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.
I. Subjects talked about:										
1. Matters about which I am uncertain	4	4.89	4	2.90	5	4.75	3	3.09	4	5.86
2. Matters on which I am uninformed	4	.88	4	2.45	4	1.73	3	.71	4	1.72
3. Shop on social occasions	6	1.50	5	.89	6	1.11	5	1.09	5	1.57
4. *Business*	6	4.48	5	6.00	7	5.10	5	5.37	6	5.85
5. *Politics*	7	2.14	6	3.70	7	2.70	5	6.62	6	4.06
6. *Matters about which I am sensitive*	7	4.58	5	6.57	6	5.26	6	7.88	6	5.46
7. Members of my family	7	2.06	5	3.54	6	5.04	7	1.90	6	4.64
8. *Interests others might consider queer*	8	6.24	5	7.76	6	6.21	7	7.05	6	9.43
9. *Philosophical questions*	9	2.59	5	6.38	7	3.48	7	5.05	7	5.93
10. Religion	8	2.62	5	1.05	6	2.81	7	2.11	7	3.47
11. What I have done or can do	7	2.88	7	1.74	7	2.60	7	7.14	7	4.82
12. Small talk	7	1.73	7	2.20	7	2.00	7	1.60	7	2.65
13. *Hobbies*	9	3.41	8	3.24	7	2.78	10	3.35	8	5.08
14. The day's news	9	.86	8	3.02	8	2.89	8	1.62	8	2.76
15. *Books*	10	3.68	8	5.47	8	4.10	11	6.05	9	6.27
16. Matters which greatly please	10	.53	9	—.50	9	1.27	10	.16	10	.79
17. Sports	11	2.68	11	2.04	11	2.16	11	1.60	11	2.56
18. Childhood experiences					11	2.50	12	2.00	12	2.31

[26] Garrett, H. E., *Statistics in Psychology and Education*, 1926, p. 129.

TABLE XXX—Continued

	College		High School		Men		Women		Combined	
	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.
II. Persons Talked To:										
1. Persons who work for compliments	3	.20	4	—.21	4	1.02	3	.19	3	.81
2. *An audience with critics*	4	5.14	4	7.41	4	5.05	4	5.50	4	8.58
3. *Persons to whom I have difficulty in making myself understood*	5	5.53	4	3.44	5	4.36	4	4.11	4	5.34
4. Irritable persons	5	1.78	5	1.85	5	2.00	4	1.24	5	2.02
5. *Opening a conversation with strangers*	8	5.50	4	6.53	6	4.39	7	6.63	6	9.07
6. *Talking over my status with a superior*	7	3.95	6	3.89	6	3.05	6	6.65	6	6.69
7. *Persons who dislike me*	6	4.48	5	8.00	6	4.55	5	8.59	6	9.16
8. *Dictatorial and domineering people*	7	5.73	5	8.29	6	6.50	6	7.18	6	9.00
9. *Audience containing object of affection*	8	2.42	6	5.40	7	3.42	7	4.14	7	5.77
10. *Audience entirely of the opposite sex*	10	6.44	6	6.83	8	7.27	8	6.32	8	9.20
11. Conversing with children	9	.44	8	.87	7	.52	10	.91	8	.80
12. *Conversing with stranger*	9	4.60	7	5.75	8	3.30	8	4.52	8	6.42
13. *People who like to argue*	8	3.36	9	2.42	9	3.05	7	2.89	8	4.98
14. *Conversing with elders*	10	5.91	7	5.22	8	4.45	9	7.00	9	7.64
15. *Famous people*	10	5.47	9	4.82	10	3.94	10	6.59	10	7.00
16. Parents and friends					12	3.40	13	.70	12	2.44
17. Audience of own age and sex					13	1.80	13	1.80	13	2.19
III. Situations in which Speech is used:										
1. Reprimanding a friend in public					2	1.70	2	.10	2	1.19
2. Embarrassing a friend in public	3	2.68	3	1.42	4	2.14	2	2.25	3	3.07
3. Places where one is supposed to be quiet	3	1.05	4	2.25	4	1.09	3	2.38	4	2.58
4. *In a large auditorium*	4	9.15	3	7.35	4	7.65	3	6.19	4	9.40
5. Make conversation when bored	5	1.65	4	1.72	4	1.18	5	2.00	4	2.60
6. *Start a discussion in a forum*	5	7.45	5	5.37	6	6.82	4	6.63	5	8.08
7. When blue	6	3.31	4	—.20	5	1.60	4	2.32	5	2.75
8. When tired	5	3.00	4	1.21	5	4.25	5	1.04	5	3.19
9. Over phone with others present	5	5.09	4	2.43	5	4.54	5	2.60	5	4.76
10. *In strange social situations*	6	6.16	5	7.66	5	6.58	5	8.00	5	10.23
11. *At formal tea or dinner*	7	6.45	5	7.00	6	6.77	7	3.16	6	8.78
12. *When highly praised*	7	7.85	5	6.29	6	6.53	6	7.12	6	9.85
13. *Talk back when others are rude*	7	4.59	6	2.85	7	2.50	5	5.11	6	5.03
14. From a high platform	5	—.93	6	.71	6	.33	5	1.11	6	1.14
15. Applying for a job	5	1.13	6	.28	6	1.40	5	1.56	6	1.83
16. Explain away a wrong impression by others	7	1.87	6	2.91	7	2.15	6	3.16	6	4.50
17. *While seated*	7	6.67	6	6.47	6	7.72	7	5.59	6	9.85
18. Turn down salesman of opposite sex	9	1.40	6	1.52	7	3.12	8	1.40	7	3.15
19. Take initiative in getting acquainted	7	9.12	6	4.73	6	4.50	7	7.00	7	7.19

TABLE XXX—Continued

	College		High School		Men		Women		Combined	
	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.
20. *Where many questions are asked*	9	6.42	7	6.36	8	5.85	7	4.79	8	9.92
21. *Play competitive conversational games*	9	5.43	7	8.71	8	6.68	8	7.37	8	9.00
22. *Respond when questioned sharply*	9	5.19	7	8.94	8	4.00	8	6.44	8	6.79
23. To show-up a conceited person	8	2.67	7	1.46	9	1.87	7	1.81	8	2.79
24. To talk irritations out of system	8	1.81	8	3.33	8	.96	9	.90	8	1.30
25. To express point-of-view when angry	8	3.92	7	.83	8	2.70	8	2.40	8	4.42
26. Tell a friend why people dislike him					8	3.20	8	.90	8	2.43
27. *Help another out of trouble*	9	2.23	8	1.22	8	2.10	10	.89	9	2.36
28. *Enliven a dull party*	9	5.29	8	3.89	8	3.89	10	5.20	9	6.92
29. Defend self when falsely blamed	10	2.11	10	1.67	10	1.86	8	2.73	10	3.35
30. When cherished convictions are attacked					12	3.80	11	1.70	11	2.38
IV. Types of Speech:										
1. Ask friend for special favors					3	—.60	1	2.00	2	1.03
2. Report cheating					2	.50	1	1.45	2	—.06
3. Heckle a speaker					4	2.50	3	.50	3	1.58
4. Lead a cheering section	3	2.38	3	7.17	3	5.80	3	4.38	3	6.87
5. Argue about prices	4	.95	5	3.86	5	1.80	3	3.90	4	3.75
6. Bluff to get into a place where one is not supposed to go	4	4.02	4	1.47	5	4.71	3	3.40	4	4.50
7. *Make a formal speech*	5	5.95	3	4.05	4	5.90	5	4.41	4	6.35
8. Use compliments to persuade	4	1.31	4	1.26	5	3.11	4	.77	4	2.16
9. Set a price on one's work	5	3.50	4	4.39	5	3.94	4	3.94	4	6.25
10. *Make an impromptu speech*	6	5.47	4	7.38	6	7.67	5	5.94	5	9.77
11. Question a superior about an apparent inconsistency	5	3.52	5	2.22	6	2.70	4	3.88	5	3.65
12. *Tell a superior how to improve his work*	5	3.13	4	3.10	6	3.60	4	2.77	5	4.33
13. Bid where bidders are being razzed	6	4.15	4	1.70	6	4.48	4	2.50	5	2.95
14. *Accuse a person you suspect of stealing*	5	1.95	5	3.05	6	1.55	4	2.95	5	3.13
15. *Serve as a judge*	6	6.11	5	4.62	6	4.45	5	6.10	5	7.00
16. *Make a pep talk*	5	5.70	5	7.50	4	7.17	5	6.18	5	9.85
17. Draw a person out by questioning					5	2.50	6	2.40	5	3.41
18. *Serve as toastmaster*	6	8.70	4	11.32	5	10.71	5	10.80	5	15.09
19. *Respond so as to cover embarrassment*	6	6.89	5	7.63	6	6.44	5	7.65	5	9.95
20. *Mimic others*	6	4.62	5	3.70	5	2.81	6	5.68	5	4.31
21. Engage in selling	5	1.72	4	.18	5	2.81	4	1.91	5	3.22
22. *Speech contests*	5	6.32	4	6.88	5	6.20	5	6.73	5	9.05
23. Ask repayment for a small loss caused by another	5	—.53	4	2.32	5	.92	4	1.21	5	1.45

TABLE XXX—Continued

	College		High School		Men		Women		Combined	
	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.
24. Stall off a creditor	5	2.87	4	1.86	5	2.11	4	4.30	5	4.00
25. Lead singing	6	4.16	5	3.15	5	4.11	5	4.30	5	6.21
26. *Explain why one does not contribute to a worthy cause*	7	3.51	5	4.44	6	3.33	7	4.00	6	5.36
27. *Give a memorized speech*	7	5.20	5	4.20	5	4.79	6	4.95	6	7.78
28. *Apologize before a group*	7	3.81	4	7.19	4	5.39	6	6.33	6	7.25
29. Offer a prayer	7	1.74	5	3.51	6	3.40	6	5.11	6	5.80
30. *Undertake a formal interview*	7	5.81	5	6.17	8	4.18	6	7.37	6	8.36
31. *Sympathize with a friend who has lost a relative*	6	5.50	6	3.33	5	4.94	7	4.72	6	6.31
32. *Criticize others for mistakes*	6	3.25	5	2.41	6	4.00	5	7.34	6	4.36
33. Refuse a request for a small favor					5	.80	4	3.20	6	2.68
34. *Make an inspirational speech*	6	6.14	6	6.38	6	5.10	6	8.18	6	8.86
35. *Introduce a speaker*	7	7.16	5	8.50	6	8.00	6	10.80	6	12.08
36. *Make excuses to avoid accepting an invitation*	7	4.71	6	4.72	7	4.30	5	5.21	6	8.26
37. Admit one "Does not know" to a superior	6	5.34	6	4.64	6	4.63	6	4.62	6	5.50
38. Admit mistakes	8	1.88	5	.52	8	1.21	7	.82	7	3.33
39. Admit social deficiencies	8	3.64	6	2.02	7	3.70	8	2.67	7	4.19
40. *Protest unfair treatment*	8	2.62	6	4.05	7	3.05	7	3.95	7	3.40
41. *Conduct group games*	8	4.32	7	5.00	7	4.81	6	5.37	7	6.94
42. Be a program chairman	8	4.68	7	6.90	7	3.01	7	2.64	7	4.07
43. Make puns	7	1.95	6	2.25	6	2.25	7	2.04	7	2.89
44. Say things to put people at ease	8	4.30	7	2.41	7	2.53	8	3.37	7	4.23
45. Tell white lies about clothing					6	1.00	7	.90	7	1.74
46. Try to convince others of their wrong	7	2.68	7	1.46	8	1.73	7	3.48	7	3.38
47. Take a verbal dig at one disliked	7	1.48	6	1.29	7	.29	6	1.32	7	1.79
48. Give commands as an officer	7	4.05	7	1.27	7	6.00	7	1.00	7	3.55
49. *Tell jokes on self*	8	2.67	7	5.06	7	3.06	8	3.89	7	4.77
50. *Solicit money for a cause*	8	2.95	7	2.17	8	2.10	7	2.25	7	3.09
51. *Recite verses*	7	6.19	6	2.05	6	2.90	7	4.57	7	4.53
52. Criticize theories believed unsound	9	1.50	7	2.20	9	2.60	7	2.06	8	3.44
53. Argue for sake of discussion	9	1.57	7	2.78	8	2.21	7	4.05	8	3.90
54. *Question another to get him to talk*	9	5.00	8	3.52	7	2.39	9	4.52	8	5.63
55. *Express appreciation for unexpected consideration*	8	5.63	8	6.37	7	3.94	9	5.29	8	8.72
56. *Act in costume*	9	6.77	7	6.47	6	6.38	10	6.83	8	9.22
57. *Criticize a friend when it is requested*	9	2.71	7	4.05	8	3.45	8	4.29	8	5.43
58. *Tell stories around campfire*	9	3.00	7	2.78	8	2.79	9	4.94	8	5.30
59. Appeal for aid to an injured person	9	1.77	8	3.97	8	4.68	9	2.12	8	4.34

TABLE XXX—Continued

	College		High School		Men		Women		Combined	
	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.	Ease	Diff.
60. *Introduce a guest*	9	4.35	7	5.94	7	6.05	8	4.95	8	8.42
61. Ask for a loan					7	2.60	9	2.80	8	3.18
62. Ask for a dance					9	2.70	6	1.10	8	2.14
63. Inquire about an accident upon which I happen	8	1.76	9	.51	8	1.24	9	1.73	8	2.07
64. Call out to a man who has dropped a glove					10	1.90	7	—.20	8	1.01
65. Stir up an inattentive auditor	8	2.61	7	1.39	7	3.00	8	2.51	8	5.02
66. Sell an idea to a superior					9	1.60	8	4.80	8	4.81
67. Ask a teacher to explain an apparent inconsistency					9	4.00	8	3.50	8	4.13
68. Ask a landlord for improvement in quarters					9	2.80	8	2.30	9	3.87
69. *Take part in a club ritual*	10	3.52	8	7.10	8	4.13	9	6.41	9	6.83
70. Give advice	10	1.86	8	3.61	8	3.35	10	1.65	9	3.51
71. *Converse as a pastime*	10	6.74	8	4.05	8	4.85	10	4.30	9	6.50
72. Tell humorous anecdotes	9	2.69	8	3.19	7	4.78	9	2.85	9	5.62
73. *Direct a person to a place in the city*	9	5.15	8	1.29	9	2.28	9	2.74	9	3.93
74. Make remarks to get a laugh	10	1.14	9	4.23	9	1.80	10	3.06	8	3.50
75. Tell stories to children					10	2.60	10	1.20	9	2.46
76. Reprimand a prankster					9	2.20	11	1.40	10	2.22
77. Ask for a date					10	2.70	10	2.80	10	4.12
78. Read aloud at sight					10	1.80	10	.70	10	1.68
79. Argue with a friend over an entertainment bill					10	3.00	11	.00	10	2.28
80. Encourage people to do their best	11	2.47	11	2.76	10	2.00	12	1.63	11	2.85

items they went as high as .083 and on others down to .038. The average was considered a fair figure for the computation of the standard deviation of the differences. When figured on the basis of the standard deviation of two means at .062, it becomes about .085. Three times the standard deviation of this difference or the amount necessary to determine an absolutely significant critical ratio would be .255. By plotting the mean difficulty of the items on a distribution scale in class intervals of .25, it was possible to determine at a glance the significance of difference in terms of the class interval in which it is plotted. Beginning with the most difficult items at 1.50 to 1.74 on the item distribution as value 1, the values progressed up the scale to 1.75 to 1.99 as value 2, etc., to items with mean values of 4.50 to 4.74 as values 13. Items of one step difference were thus probably significant, and items of two steps difference were absolutely significant for these high school and college students as a group. Differences for sub-groups are plotted in the same way, although the significance of these sub-group differences in terms of equal steps, because they involve fewer cases, are probably not quite so reliable.

The activites of average difficulty are items labeled with a difficulty value of 6 to 7. The critical ratios for the best criterion group differences available for each group are also indicated. A few items are included from Form A of the scale on which data for a comparison of high school and college groups are not available. Items which are underlined are items retained among the 96 items of Form F of the Attitude Scale. The items are roughly classified into items dealing with "Subject talked about," "Persons talked to," "Situations in which speech is used" and "Types of speech." Within each class, the items are ranked for data on the combined group from the most difficult down to the least difficult. The columns marked "Diff." indicate critical ratios for mean differences between inferior and superior speakers on the items. With these explanations the data in the table may be read directly. The last two columns of the table indicate the degree of felt difficulty for the combined median quartiles, and the critical ratios of the criterion group difference for all criterion groups combined. For instance, at the top of the first table we find two items involving speech about matters on which one is uncertain, and speech about matters on which one is uninformed. The items both have an average difficulty of 4 and are more difficult speech activities than the average. The first item differentiates superior from inferior speakers, while the second item does not. Reading from the columns to the left we see that men report less difficulty in these speech situations than women, and men report lack of information a more difficult problem than lack of conviction. There are no differences between college and high school students on the difficulty of these items. Reading down the scale we find talk about one's family and religion subjects of average difficulty, although women appear to find these easier subjects of conversation than men. Matters which greatly please, sports and childhood reminiscences are easy subjects to talk about. As the table is read through one will observe that on the whole speech activities which are relatively easy and relatively difficult do not differentiate superior from inferior speakers as well as activities which are of moderate difficulty. On the whole, relative difficulties for different groups of subjects are about the same, although there are many items on which group differences of 2, or significant differences occur. The activities represented in the scale are seen to show wide and significant differences in the speech attitudes about them.

Those speech activities appear to be most difficult in which, (1) there is a deficiency of information or conviction, (2) there are frus-

trating emotional complications such as crisis situations or negative speech conventions, (3) non-energizing personal feelings, or no "set" for performance may exist, and (4) the situation is strange, complex or formal. Relatively easy types of speech activities are those in which, (1) the individual talks about something he knows about or is interested in or believes in, (2) the situation has positive, energizing and integrating speech motivation, (3) the elements are relatively familiar, simple and informal.

In the analysis of the frequencies of speech activities, the average of the means for the quartile groups has been used as the item frequency index. Table XXXI has been prepared to indicate the mean frequency of all items for various groups. The mean frequencies of these items is somewhat lower than the mean difficulty of the items in the Speech Attitude Scale. The mean item frequency is represented by the item value of 2.32. The mean item value for eliminated items is lower and has a higher standard deviation than for retained items. Many of the eliminated items represented activities of too high frequency to differentiate, although some of these items were of too common frequency to differentiate groups. The item values for criterion cases varied up and down the scale about equally for the two combined groups. Table XXXII presents data for speech activity frequencies for these groups comparable to Table XXX for speech attitudes. Only a representative sample of activities have again been compared. Mean comparisons for men and women only and combined groups have been included. Mean scores for men's and women's

TABLE XXXI

MEAN SCORES ON SPEECH EXPERIENCE INVENTORY ITEMS FOR VARIOUS GROUPS AND ITEM SERIES

SUBJECT GROUPS	SCHOOL STATUS	SEX	DERIVATION OF INDICES	SERIES OF ITEMS	MEAN	S. D. OF MEAN DIST.
3–5	Combined	Combined	Ave. of 2 Quartile Means	1st 48		
& 2–4	Combined	Combined	Ave. of 2 Quartile Means	2nd 52	2.32	.58
3–5	Combined	Combined	Ave. of 2 Quartile Means	1st 48	2.36	.46
2–4	Combined	Combined	Ave. of 2 Quartile Means	1st 48	2.52	.43
2–4	Combined	Combined	Ave. of 2 Quartile Means	2nd 52	2.13	.63
3–5	Combined	Combined	Fourth Quartile Means	1st 48	3.16	.45
2–4	Combined	Combined	Fourth Quartile Means	1st 48	3.16	.45
3–5	Combined	Combined	First Quartile Means	1st 48	1.81	.44
3–5	Combined	Combined	First Quartile Means	1st 48	1.79	.47
2–4	Combined	Combined	Fourth Quartile Means	2nd 52	2.56	.69
2–4	Combined	Combined	First Quartile Means	2nd 52	1.68	.59
3	College	Combined	Ave. of 2 Quartile Means	1st 48	2.58	.55
5	High S.	Combined	Ave. of 2 Quartile Means	1st 48	2.53	.50
2–4	Combined	Men	Ave. of 2 Quartile Means	1st 48	2.56	.48
2–4	Combined	Men	Ave. of 2 Quartile Means	2nd 52	2.23	.67
2–4	Combined	Women	Ave. of 2 Quartile Means	1st 48	2.45	.52
2–4	Combined	Women	Ave. of 2 Quartile Means	2nd 52	2.09	.68

groups are for 50 cases each from groups 2 and 4 and for the combined groups from 100 cases on eliminated items and from 380 cases of groups 3 and 5 for retained items. These later group differences especially, may be considered highly reliable. The correlation of the

TABLE XXXII

AN ANALYSIS OF DEGREES OF FREQUENCY OF VARIOUS TYPES OF SPEECH ACTIVITIES WITH CRITICAL DIFFERENCES IN THE USE OF THESE SPEECH FUNCTIONS BY SELECTED INFERIOR AND SUPERIOR SPEAKERS

THE ACTIVITY	MEN		WOMEN		COMBINED	
	FREQ.	DIFF.	FREQ.	DIFF.	FREQ.	DIFF.
1. Served as auctioneer	1	1.90	1	1.56	1	.18
2. Served as cheer leader	2	2.65	1	1.81	2	3.44
3. Spoken in extempore speaking contest	3	3.82	2	2.69	3	5.02
4. Spoken in declamatory contest	3	2.76	3	3.43	3	5.04
5. Sold newspapers on the street	5	3.41	1	1.39	3	2.90
6. Participated in tag-day sales on streets	1	1.41	4	4.45	3	3.86
7. *Talk about one's hobbies*	6	6.09	4	3.31	3	6.42
8. Clerked in a store	6	1.02	3	1.57	4	1.72
9. Taught a class	3	4.55	5	3.28	4	6.42
10. Canvassed articles from door to door	5	3.33	2	1.14	4	3.44
11. Solicited strangers for funds for an organization	4	3.64	4	3.77	4	5.16
12. *Served as a toastmaster*	4	4.22	3	3.77	4	11.50
13. *Made a pep talk*	5	4.55	4	3.80	4	9.18
14. Spoken about one's travels	6	7.61	4	2.06	5	5.59
15. Interviewed a prospective employer	7	6.18	3	1.76	5	4.82
16. Memorized verses to speak for company	4	3.78	6	2.32	5	4.38
17. *Made after-dinner speeches*	5	8.35	4	4.86	5	6.75
18. *Told stories to entertain*	5	3.65	6	3.40	5	10.10
19. Held long conversations over telephone	5	2.79	7	1.22	6	2.96
20. *Interviewed an important person for information*	6	8.58	4	4.21	6	5.70
21. *Memorized pieces for church programs*	7	3.32	9	4.57	6	6.74
22. Tell jokes	8	3.20	7	2.32	7	4.37
23. *Go out of way to introduce a friend*	8	4.07	8	2.97	7	7.59
24. *Participate in classroom debates*	4	5.97	8	5.49	7	4.91
25. Bargain with tradesmen	7	3.64	6	1.82	7	3.32
26. Complain when treated unfairly	9	2.78	6	3.07	8	4.41
27. *Taken parts in school plays*	10	7.29	8	5.20	8	13.00
28. *Parts in school plays have been long*	7	4.55	8	6.46	8	9.18
29. *Presented views in a forum*	8	8.00	7	3.88	8	12.75
30. *Read stories aloud for entertainment*	6	5.28	8	4.05	8	12.75
31. *Served as chairman of a meeting*	8	2.74	8	6.12	8	10.25
32. *Criticized the performance of others*	7	6.64	8	3.24	8	13.50
33. Volunteered to recite in class	9	3.78	9	2.32	9	4.38
34. Participate in informal discussion	10	6.34	9	2.62	9	11.25
35. *Made an oral book report*	9	5.31	9	5.28	9	11.65
36. Participate in discussions of the family	10	2.70	12	3.17	11	5.24

means of groups 2 and 4 with those of 3 and 5 was +.69 for the first 48 items. Much of the variability influencing this correlation may be attributed to the smaller number of cases in groups 2 and 4. Degrees of frequency are plotted on this table for class intervals of .25 from 1.00 upward. Values 6 and 7 represent average frequencies.

The scale reflects marked differences in the frequency of the use of various types of speech activity. There appear to be more differ-

ences in the use of various types of speech activity between the sexes than there are in the variations of their attitude toward the uses of speech. The fact that these differences appear in a plausible direction tends also to support the evidence on validity of the scale. The simple and informal speech activities are reported with much greater frequency than the complex and formal ones, and also provide greater differentiating indices between students classified as good and poor speakers.

Chapter VI

Conclusions

In presenting the conclusions to this study, the author wishes to emphasize the fact that these data have been collected in specific circumstances. An attempt has been made to describe the methods of collecting and analyzing the data as precisely as limited space permits. The conclusions drawn are those which appear to be justified by the data at hand. With other subjects and under other methods of collecting data and analyzing these problems, variations in results may be expected to appear. The Speech Scales analyzed in this study cannot be used blindly as a substitute for intelligent diagnosis by a skilled speech teacher. For best results they are to be treated in the same way a professional personnel psychologist uses other personality and aptitude tests. With such treatment, they may prove useful instruments for diagnosis and research.

The following conclusions may be drawn from this study:

1. The final form of the Speech Attitude Scale has a high index of reliability. As a measuring instrument it provides a uniform and consistent index of the individual's attitudes toward his use of speech.

2. The implication of the scale reliability for the speech attitudes of the individual is that they are relatively generalized traits. The individual who has relatively positive speech attitudes in one adequate sampling of his speech activities, will also have relatively positive attitudes in another adequate sampling of his speech activities. The fact that it is necessary to tap a fairly large sample of these activities to get a reliable index of his speech attitudes, suggests that there are many individual variations in speech attitudes toward different uses of speech and speech situations.

3. There are wide individual differences in the speech attitudes of individuals toward their use of speech in various situations as reflected in Speech Attitude Scale scores.

4. Speech attitudes toward different types of speech functions and activities vary widely. Those speech activities toward which se-

lected poor speakers have the most negative speech attitude are on the whole the activities toward which speakers of other degrees of skill also possess the most negative attitude.

5. Attitudes toward some speech activities differentiate poor from good speakers much better than do others. The speech activities, on the average, which best differentiate good from poor speakers are the activities which are judged to be neither most easy nor most difficult.

6. A sufficient number of speech activities which differentiate the speech attitudes of good and poor speakers for both men and women, and at the high school and college level were analyzed to form a Speech Attitude Scale of satisfactory length for convenient use.

7. The validity correlations of scores on the Speech Attitude Scale and teachers' ratings on speech attitudes and performance and self-ratings on speech attitudes and general effectiveness are as high as similar scale scores usually produce. The Scale scores show as high validity correlations for teachers' judgments of the general effectiveness in the use of speech as they do for judgments of the speech attitudes of the student. Student self-ratings correlate with scale scores more highly than do teachers' ratings, but not highly enough to indicate that single comparative self-judgments provide a highly valid index of speech attitudes.

8. Speech Attitude Scale scores vary widely from group to group of subjects classified in various ways which might be expected to show differences in speech attitudes. The scale scores indicate that speech attitudes as measured by this scale vary with such factors as sex, high school and college populations, the demonstration of specific speech problems, as well as special proficiency in speech arts, socio-economic status, energy level, knowledge, emotional stability and sociality. There is a marked relationship between speech attitudes and speech experience, although the corresponding scales do not correlate highly enough to appear to be measuring exactly the same trait. There is a small negative correlation between positive speech attitudes and the tendency to accept negative speech conventions which may exercise an inhibiting effect upon speech. The speech attitudes of the individual appear to change as the result of experiences in speech education.

9. The final form of the Speech Experience Inventory produces high reliability correlations. The speech adjustments of the individual appear to be highly consistent. High reliability in the adjustment scale is attained with the use of fewer items than were necessary for the Speech Attitude Scale.

10. Individuals differ widely in the frequency of their use of speech, as well as in their use of speech of different types. The more commonplace speech activities appear to differentiate the speech of inferior and superior speakers better than do the less commonly used speech activities.

11. A sufficient number of speech adjustment activities which reliably differentiated inferior from superior men and women speakers at both the high school and college level were analyzed to produce a Speech Experience Inventory short enough for convenient use.

12. The validity correlations of the Speech Experience Inventory scores with teachers' ratings were of about the same magnitude as those of the Speech Attitude Scale. This adjustment scale indicates marked differences in speech experiences among members of various groups.

13. The reliability of the S. C. (Speech Convention) Scale is not as high as are the reliabilities of the other two scales, although only those items are retained which appear to differentiate inferior from superior speakers.

14. Validity correlations for the S. C. Scale are also lower than similiar correlations for the other scales, and are consistently negative.

15. Speech attitudes and activities appear to be somewhat related to the acceptance of speech conventions. There is a greater tendency to accept these conventions among all subjects than to reject them. Marked differences appear between various groups in the matter of acceptance of speech conventions. High school students are much more inclined to accept these conventions than college students. Seleted superior men speakers especially, reject more conventions than selected inferior speakers. There appears to be a greater tendency among average and inferior speakers to accept egocentric conventions than is true for the selected superior speaker. The superior speaker shows a greater tendency to ignore or remain indifferent to the personal element involved in reaction to a speaker. This evidence tends to support the contention that one quality of the superior speaker is the tendency to speak with "abandon."

16. There appear to be some definite implications of this study for speech education. The study suggests that characteristics of the speaker as a personality may have a vital influence upon his speech performance. It is possible to apply techniques of the student of psychology of personality to the study of this problem. A thorough exploration of the potentialities of this field may throw much light on the problems of speaking and speech education.

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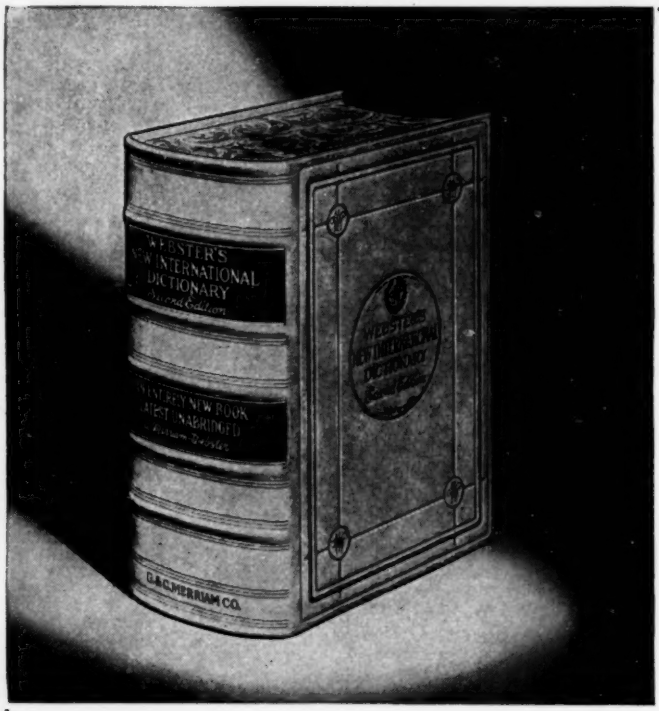

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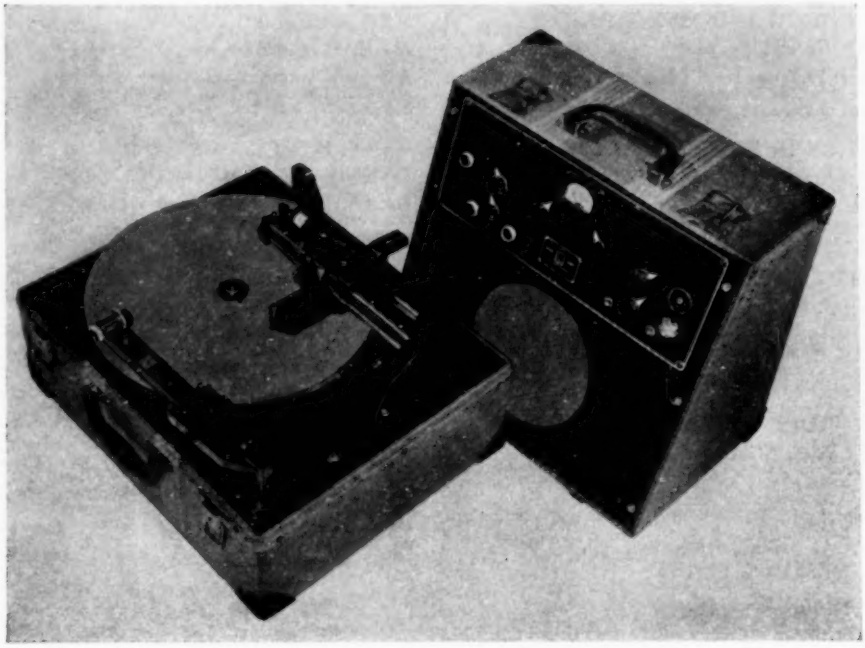

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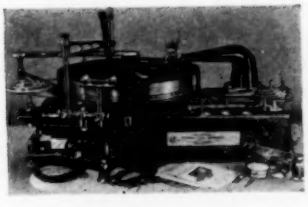

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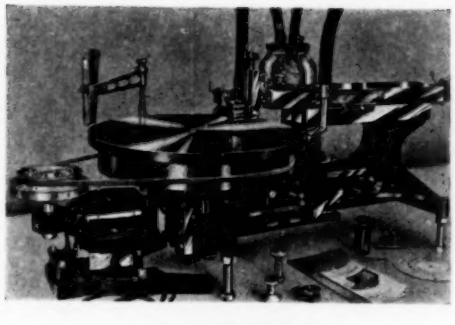

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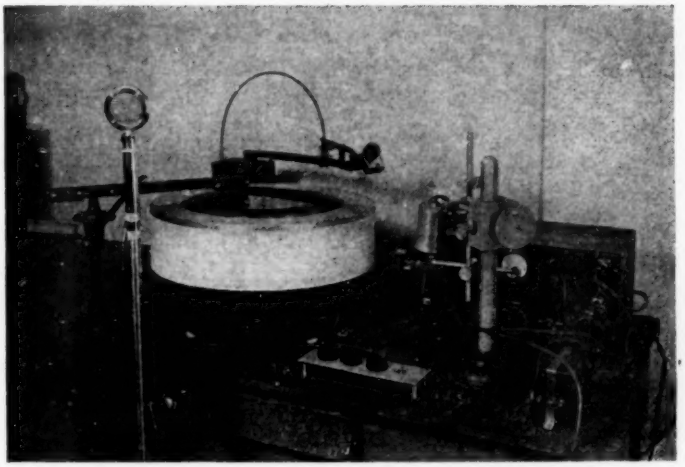

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